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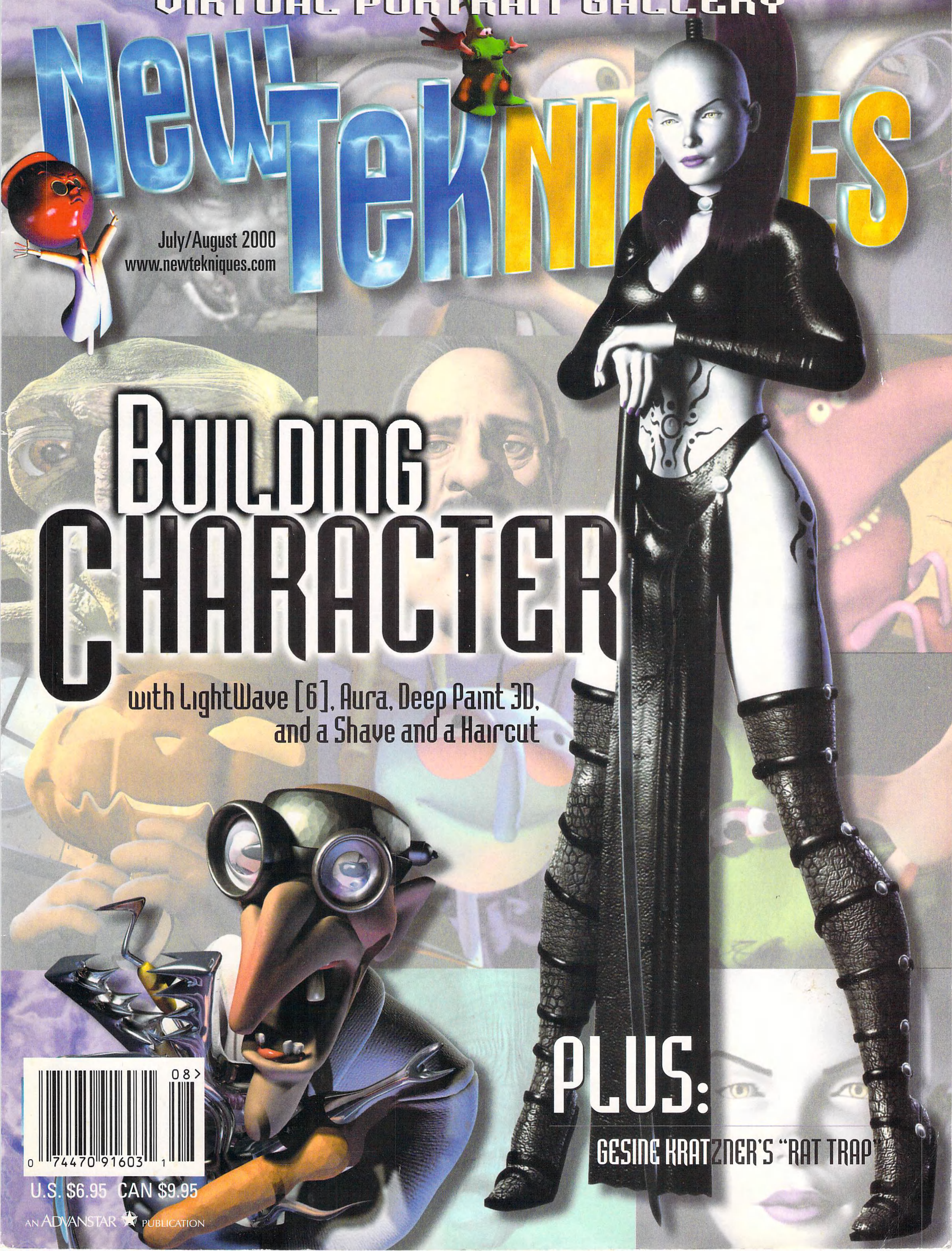

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CONTENTS

Vol. 4, No. 3, July/August 2000
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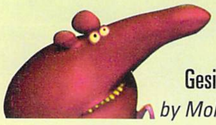
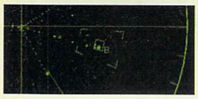


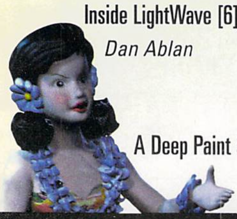
DANG FINE TOONING
A feature on a short film:
Gesine Krätzner's Rat Trap ... p. 6
by Molly Dinkins & Dick De Jong

ROGUE'S GALLERY
An Exhibition with Character ...p. 10



DO NOT ADJUST YOUR TV SET
Tweaking Your Video with
Toasterscope ...p. 20
by Bill Evans

FOR YOUR EYES ONLY
An excerpt from his new book,
Inside LightWave [6] ... p. 22
Dan Ablan



HULA GIRL
A Deep Paint 3D Case Study ... p. 46
by TJ Nabors

COLUMNS

Impressions:
Hollywood Technicasting .... p. 2
3D Starlets on a CG Couch
by Molly Dinkins & Dick De Jong

Visions:
The Limbic Limbo ....p. 3
by Tim Jenison

Products:
New & Retooled ....p. 4

Plugged In
Swarming with LScript v.2.0 ....p. 14
An Lscript for LightWave [6]
by Bob Hood

Blazing Aura:
Building Character .... p. 16
Creating skin textures in Aura, Part II
by Steve Bowie

Toast Master/Flying High:
Lip-synching with Animouth................................... p. 28
Animating with the Amiga!
by Bohus Blahut

Mojo:
Real People.. p. 56
by Mojo

TUTORIALS

One + One = Compositing in LightWave ....p. 32
Simple and Multi-pass Compositing
by Jared Brookes

Virtual Rogaine ....p. 38
A Shave & a Haircut Tutorial
by Rich Suchy

ON THE COVER: This issue's cover features characters by nine LightWave artists. You can view sequences of their creations in the Rogue's Gallery on page 10.

Impressions

A FEW WORDS FROM OUR EDITORS-IN CHIEF

by Dick De Jong
& Molly Dinkins

Hollywood Technicasting

3D Starlets on the CG Couch

tech•ni•cast [from Greek *tekhne*, to make (a cast of characters) by art or skill]

We met the super bikini model, Mystique of *X-Men*, at the New York City press junket. While the actress's cyber stand-in - tarred blue and feathered - invites intense inspection, no pixeled pin-up can compete with Rebecca Romijn-Stamos, the person.

But studios will keep trying. Last year, the now defunct Virtual Celebrity Productions resurrected Marlene Dietrich (with permission from her grandson) and reconstructed her - eyes seducing from below the brim of her hat. This year, Hollow Man and mutants were painstakingly and expensively digitized for the sake of the story.

But cost-effective CG stars may only emerge in an emergency. When Oliver Reed died before completing his role in *Gladiator*, composite artists saved the day by cutting and pasting him into his final scenes. Someday, when some screen star cannot finish a film, it may prove cheaper to generate a computerized double than to reshoot a multimillion dollar movie. But no one will ever duplicate the evocative, engaging, gorgeous, sensuous, real Rebecca.

That's our opinion, check out what Tim Jenison and Mojo think about cyber stars.

SIGGRAPH Sightings

X-Men expositions were ubiquitous at SIGGRAPH 2000. While LightWave artists never pushed a pixel on Mystique, at Digital Domain, they did recreate another famous female - Lady Liberty. The statue provided the backdrop for the furious finale on Liberty Island, with the LW X-Jet whisking the superheroes away.

The Crescent City CG GabFest furnished the showcase for a host of LightWave shooting stars. Aristomenis Tsirbas and a team of Station Xers crafted *Full Tilt*, the opening animation for the prestigious Electronic Theater. Also in the program, Joe Alter's award winning *Jersey* trucked in front of its first large American audience. At a conference reception, three guys from Seattle - Charles R. Anderson, Jose Perez III, and Joshua Gunther - received first prize for young animators in a national competition sponsored by Hewlett-Packard for their short, *Morons from Uranus*.

Bruce Branit found time in his whirlwind life to cruise the exhibition floor. *405, the Movie*, the amazing independent film that he and Jeremy Hunt made continues to be joyously indulged and celebrated. The short has electrified over 650,000 viewers on the web in less than two months, has garnered a thumbs up from Roger Ebert's *At the Movies*, and has reaped the filmmakers a deal with CAA, a top notch talent agency.

Meanwhile, Joe Alter was busy back at his booth with crowds looking to escape bad digital hair days. They could have used the tutorial, *Virtual Rogaine*. (Joe, what about software for post production 3D toupees for Burt and Bruce?) Near by, project:messiah folks were spreading their word - and they have been heard by several artists featured in the *Rogue's Gallery*.

So mostly, this issue focuses on technicasting: artists who make the virtual actors, the technicians who make the artistry possible, and the stories that savor some of the infinite artistic possibilities.

Tekker Takes a Licking but Keeps on Ticking

If you have visited www.newtekniques.com lately, you will have noticed that the TekTicker is once again rolling. Now manned by Jim Cullers, the site has added video interviews to its arsenal. When we were in New Orleans for SIGGRAPH, we taped Branit, Tsirbas, Alter and others. Keep checking the website for these special conversations with today's hot technicasters. NT

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TEKTICKER Returns

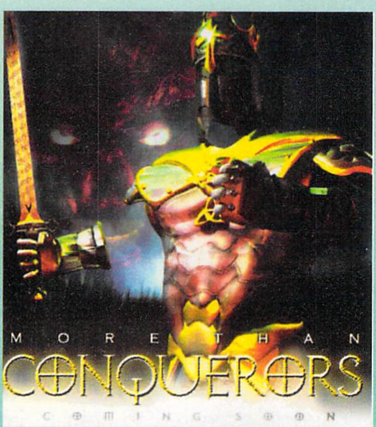
www.newtekniques.com/TekTicker

The popular TekTicker is back with news items and links about a wide range of topics. Now written by Jim Cullers, check TekTicker out regularly.

NEW ART GALLERY

www.newtekniques.com/ArtGallery/

The NewTekniques Art Gallery continues to collect work from artists from around the globe.



The Conqueror by Kendall Ware.

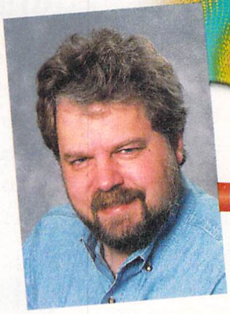
COLUMNS

LightWave Fundamentals: Seeing the Lights - An introduction to using the different lights in LightWave.

The Idea Factory: Bob Ketchum weighs in on the Napster controversy.

Playing with Fire: Aura Tutorial: Steve Bowie brings us Part I of Texture Basics. (See page 16.)

Hear Ye! Hear Ye! - Bob Ketchum, the Regent of Reverb, discusses audio compression. Sample sound files are included on the site.



Visions

FROM THE PAST, FOR THE PRESENT, AND INTO THE FUTURE

THE LIMBIC LIMBO

Fooling Mother Nature

by
Tim Jenison

Ever seen a totally convincing computer generated human? Me either. All that time and money spent, and they look fake. (And, when you consider how cheap human actors are, heck, why even bother?)

Here's why it's hard to make a convincing virtual actor, or "synthespian":

Your face has a couple dozen muscle pairs that are jacked directly into your brain's emotion generator, the limbic system. While your conscious mind controls the basic expression on your face, your subconscious is sending out "microexpressions" and other behaviors you may be totally unaware of.

These cues are picked up by the amygdala, a small section of your forebrain that is highly adapted to reading facial expressions and body language.

When this built-in face decoder sees a virtual actor, it knows something isn't right. It looks insincere or even creepy.

With motion capture, animators can reproduce body language and, very crudely, facial expressions. This technology is improving rapidly, however; and by capturing the expressions of a flesh and blood actor, we can sometimes fool the amygdala.

The Holy Grail of computer graphics is a virtual actor that doesn't require a human puppeteer "behind the curtain." In other words, it would have its own personality that would be indistinguishable from a real human being.

To be convincing, a virtual actor may have to be as smart as a real human being. Will this ever happen?

Ray Kurzweil in his new book, "The Age of Spiritual Machines," says that, based on the exponential rate of technological evolution, a computer may reach intellectual parity with humans in 50 years or so.

Then, seconds later, that computer would become a heck of a lot SMARTER than us, Kurzweil argues, because it would have far more information, a better memory and faster circuits than the "wet" computer in your skull.

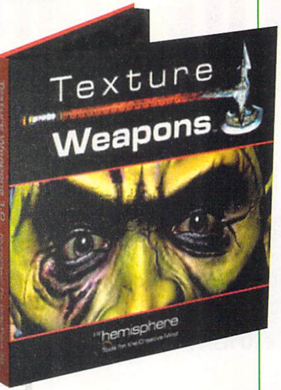
The dark possibilities of this are well explored in fiction, for example, "The Matrix," in which humans become subservient to artificial intelligence.

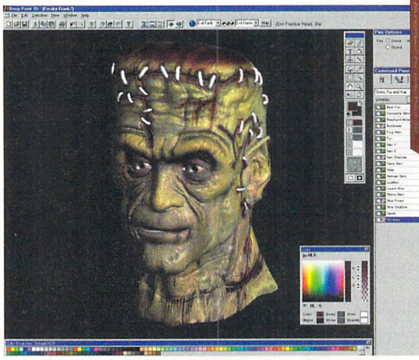
Kurzweil's book, on the other hand, explores some of the brighter prospects of intelligent electronic companions. I share his optimism and I look forward to the day when machines are indistinguishable from real people. I think it may be the best thing to happen to the human race. After all, once you can fake sincerity, you've got it made!

New & Retooled

Texture Weapons for Deep Paint 3D

New Zealand's Right Hemisphere announced the official release of **Texture Weapons for Deep Paint 3D**, the most advanced set of texturing tools available for 3D digital content creators. Designed to extend Deep Paint 3D, Texture Weapons provide enhanced painting and mapping productivity and help create virtually distortion-free texturing.





Texture Weapons include Right Hemisphere's MercatorUV with V.A.M.P. mapping technology, a powerful set of functions for automatic and manual UV editing of complex 3D polygonal models. **Texture Weapons** also include the revolutionary Projection Paint feature. Projection Paint provides painting from any position within a 3D space with brush and texture size unaffected by UV coordinate variations.

Deep Paint 3D provides designers with authentic artistic media such as oils, watercolors, crayons and pastels that can be "brushed" directly onto 3D models. With a single stroke Deep Paint 3D paints complete material or shader definitions, and can be used to easily brush surface textures, such as skins or various types of wood, directly onto objects. Other features include multi-layer support for bump, color, shine, opacity, and glow channels; 3D masking and selection tools, including a 3D polygon selection tool.

Texture Weapons is now shipping and priced at US $495, with a special introductory offer for existing Deep Paint 3D users of US$395. Texture Weapons requires Deep Paint 3D. Deep Paint 3D is available from Right Hemisphere for US $795. For more information, www.righthemisphere.com

Oxygen GVX420 and Oxygen GVX1 Pro Graphics Accelerators

3Dlabs announces two additions to its **Oxygen** family; further strengthening the widest range of professional graphics accelerators in the history of the industry. Both boards use 3Dlabs' new generation GLINT R4 rasterization processor to deliver outstanding performance and functionality for 3D workstation applications.

With 128MB of memory and dual display capability, the **Oxygen GVX420** is the most capable high-end Oxygen workstation graphics accelerator ever available. The new **Oxygen GVX1** Pro complements the existing mid-range **Oxygen GVX1** by enhancing geometry performance, increasing memory capacity to 64MB and adding a DVI-I connector for directly driving digital displays.

The **Oxygen GVX420** has been certified for LightWave [6]. It deploys two GLINT R4 processors and the GLINT Gamma G2 geometry processor. In dual screen mode, the Oxygen GVX420 can directly drive two independent displays, effectively acting as two 64MB graphics boards.

The **Oxygen GVX420** has an MSRP of $2,499 and is expected to ship in August 2000. The Oxygen GVX1 Pro has an MSRP of $1,199 and is expected to ship in late September 2000. For more information, please visit www.3dlabs.com.

RTV File I/O for AfterEffects

Safe Harbor Computers is proud to announce the addition of a new product to its line: **Robert Tasa's RTV File I/O for AfterEffects**. Amazingly simple, the **RTV File I/O** plugin allows AfterEffects to use the Video Toaster NT's proprietary RTV file as a native file format.

Previously, RTV files had to be converted to single frames, then converted back to the RTV file format for output. Tasa's program removes the long conversion process. You can use AfterEffect's set of powerful compositing and manipulation tools to create new video clips, or you can edit existing video clips captured by your new Toaster NT.

For pricing and further information contact www.sharbor.com or call 1-800-544-6599.

RPC Plug-in for LightWave 5.6

ArchVision announces the release of an **RPC Plug-in** for LightWave 5.6. The plug-in utilizes ArchVision's award-winning RPC file format to represent complex objects within LightWave scenes as a single polygon and texture.

RPC technology provides a way to include complex, render-friendly objects into animation, desktop publishing, and print production. For example, the 3D image-objects in the realtrees library are meticulously crafted digital models, with as many as 2.5 million polygons per plant. When rendered, however, each image-object is represented by a single polygon and texture per frame. Along with realtrees, ArchVision has a large and growing library collection of realpeople images as well.

"The LightWave platform is a recognized leader in the field and we look forward to delivering top-quality, drag and drop content to this market," said Randall Stevens, President of ArchVision. For more information, call ArchVision at 606-252-3118 or visit us on the web at www.rpcnet.com or www.archvision.com.

MOTEK's StockMoves

StockMoves is a Web-based library of stock motions for use by graphics artists, game developers, and animators in motion capture projects. **StockMoves** draws on MOTEK's proprietary 2 terabyte catalogued library of motion capture data and benefits from the company's extensive, professional experience in the motion capture industry. **StockMoves**' initial release consisted of over 1,000 moves. Additional moves are added daily, with more than 10,000 expected by the fourth quarter of 2000. These stock motion capture sequences can be imported into a wide range of 3D packages including LightWave.

UNICA is the first web-based motion capture solution that lets users custom-build data sets and preview them before purchase and download - all at a fraction of the cost of a traditional motion capture studio. UNICA lets you choose and "blend" motion sequences, including individual body parts, until just the right effect is created.

MOTEK, the leading developer and provider of high-quality motion capture technology, has motion capture studios in Manchester, New Hampshire and Amsterdam. For pricing and more information, go to www.e-motek.com

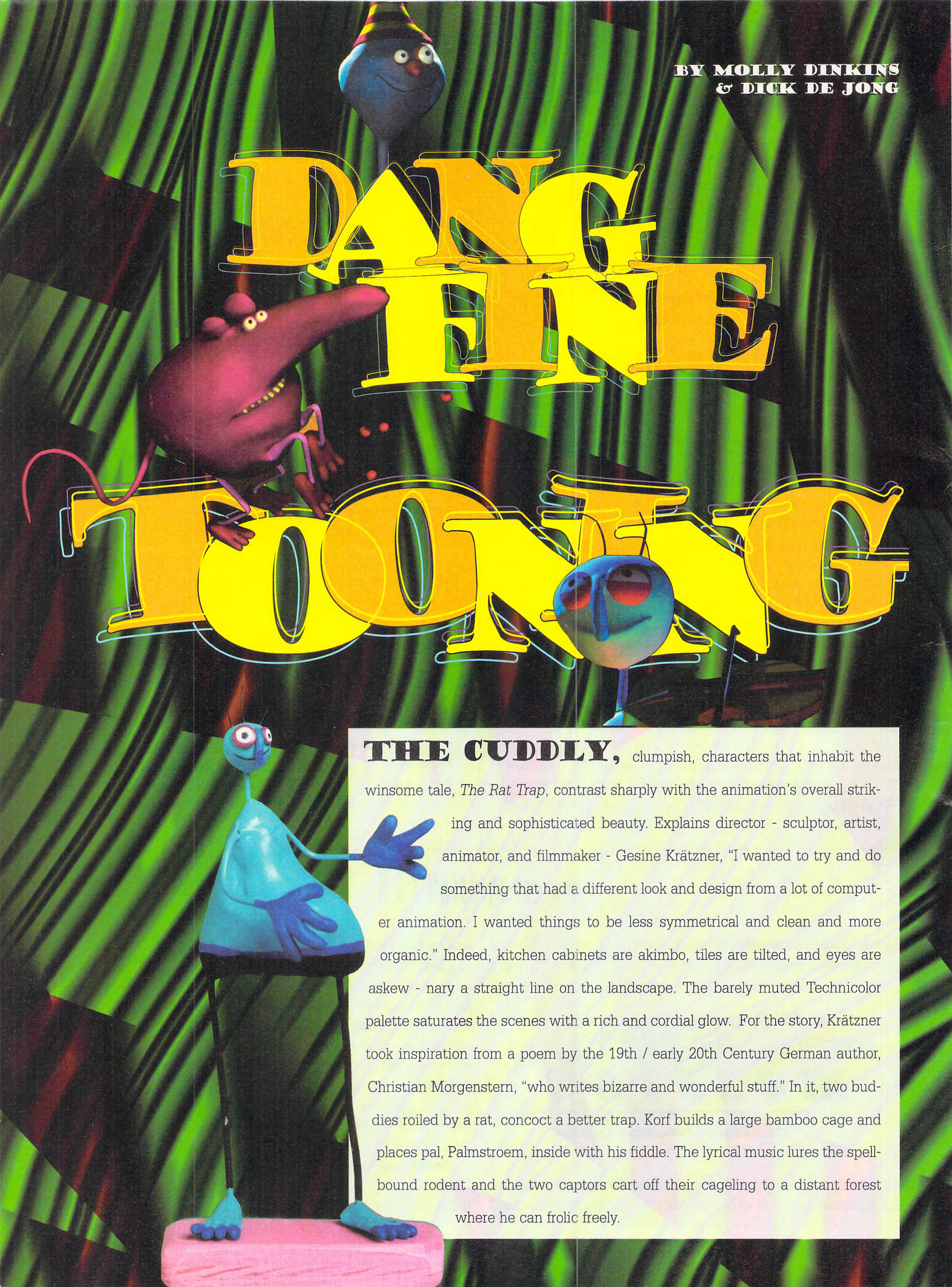
project:messiah 1.5.5

PmG (project:messiah Group) is shipping version 1.5.5 of its **project:messiah** 3D animation package, now with basic LightWave [6] capability. The new version marks the debut of project:messiah's much-anticipated CD release. Version 1.5.5 provides user of either product the ability to share messiah scene files between LW 5.6 and LW 6.0.

This version also debuts a new effect, MotionBlender. Animators can use point-and-click simplicity to assign numerous poses, including expressions and phonemes, to on-screen sliders, which are then moved, or controlled procedurally, to animate. In addition, open GL Previews can be saved as AVI files.

The **project:messiah 1.5.5** CD includes over 90 minutes of MPEG video, "Quickstart" tutorials, VideoHelp movies, lots of sample scenes and objects, and an easy-to-use Adobe Acrobat version of the docs.

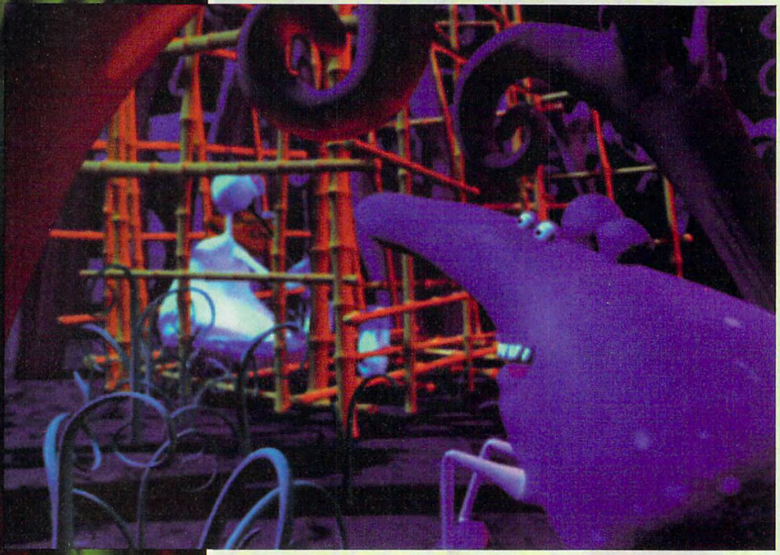
Project:messiah 1.5.5 retails for US $695, and may be ordered online at www.projectmessiah.com. For current users, this is a free upgrade.



BY MOLLY DINKINS
& DICK DE JONG

DANG FINE TOONING

THE CUDDLY, clumpish, characters that inhabit the winsome tale, *The Rat Trap*, contrast sharply with the animation's overall striking and sophisticated beauty. Explains director - sculptor, artist, animator, and filmmaker - Gesine Krätzner, "I wanted to try and do something that had a different look and design from a lot of computer animation. I wanted things to be less symmetrical and clean and more organic." Indeed, kitchen cabinets are akimbo, tiles are tilted, and eyes are askew - nary a straight line on the landscape. The barely muted Technicolor palette saturates the scenes with a rich and cordial glow. For the story, Krätzner took inspiration from a poem by the 19th / early 20th Century German author, Christian Morgenstern, "who writes bizarre and wonderful stuff." In it, two buddies roiled by a rat, concoct a better trap. Korf builds a large bamboo cage and places pal, Palmstroem, inside with his fiddle. The lyrical music lures the spellbound rodent and the two captors cart off their cageling to a distant forest where he can frolic freely.



Through the new environment
romps the rat in rapt content;
Palmstroem homebound with his friend,
relishes the happy end.

Model Characters

"The characters" Krätzner describes Korf and Palmstroem, "are modeled after some figures that I had sculpted a little while before. I just made a whole bunch of people and creatures out of sculpting material and then painted them. I do that sometimes for no particular reason. They just stand on the mantelpiece or on top of my computer. I went and looked which ones could fit the two guys in the poem and found those two that I then modeled in LightWave. It is actually amazing how much of the character is already in the design, because the sculptures dictate the way the characters move and behave.

"For example both characters hands are very large compared to the rest of the body. That means that every time they pick something up it looks like they have to be really careful not to break it. Like when Palmstroem plays the violin it looks like this delicate instrument being played by someone too big and awkward for it, who still manages to play it beautifully. A bit like a friendly giant. When Palmstroem and Korf first walk in, that's the only walks I have in the film. Because the feet are so big they have to lift them up quite high in order to walk, which again makes them feel a little clumsy.

"One of the main problems with developing the characters for The Rat Trap was that it is so short, [a little over two minutes long], so you can't really develop a very complex personality. I wanted one of them, Palmstroem who plays the violin, to be a little more inward, artistic, a bit whiny and the other one, Korf who builds the cage, to be a bit more outgoing, practical and hands-on. If you watch the film with that in mind I think you'll see what I mean. This attitude reflects in the way they walk, talk (voice and facial expressions), stand or sit and of course what they do."

As the artist hits his stride
comes the rat and steps inside.

The protagonist, whom Krätzner called Ratty, was designed specifically for the role. As always, the critter first was sculpted, then modeled in LightWave. Continues Krätzner, "Ratty has both eyes on the same side of the head. For the film that meant, that you only ever see Ratty from the side (there are two different versions of him, facing left or right with the eyes on that side), because it looks odd from a straight-on angle."

Discovering America

Krätzner, born in Siegen, Germany, studied art and film in Germany and England, where she launched a career in model making, film, and stop motion animation. In the mid-nineties, she came to the States on a grant and was captivated by CGI when she visited Pixar and viewed the work-in-progress, *Toy Story*.

Later, she convinced Will Vinton Studios in Portland to take her on as an intern, where she encountered LightWave for the first time. "Vinton's was using it and I learned it, mainly teaching myself with those tapes and manuals. I had actually hardly ever touched a computer before, and LightWave was pretty much the first program I ever learned. It didn't come easy to me, but finally I understood how the computer thinks in 3D."

During her tenure at Vinton, she has made models, computer animated, directed projects and won beaucoup kudos, from a Clio to a Cannes Lion. Using downtime and after hours at Vinton - where animators are encouraged to enlist fellow artists and company equipment to develop personal projects - Krätzner spent over two years on her film, (averaging one minute a year!).

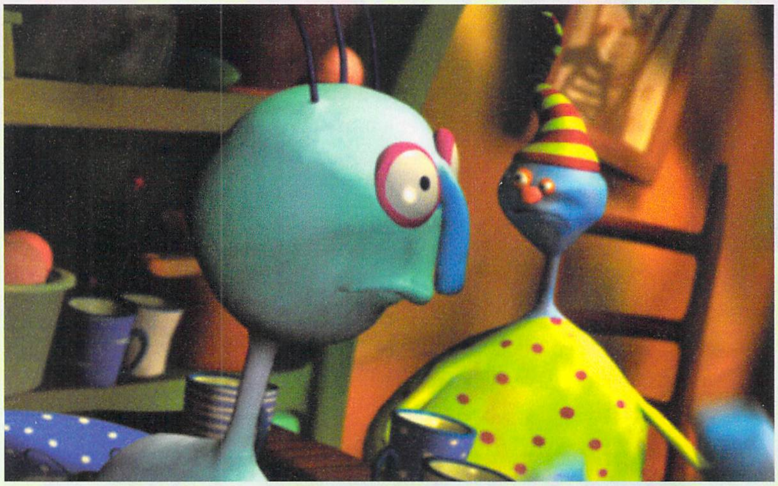
"The animation didn't take all that long. It was most-

ly modeling, character setup and lighting that took me a long time, because these were all new skills for me. Before "*The Rat Trap*, I had only been animating, everything else was done by the technical directors and not to worry my little head about that. Now I had to figure it all out for myself, which wasn't always fun, but now I know how to do a whole lot more stuff.

"I did all the animation and the bulk of the modeling. A lot of people helped, but they kept getting busy with commercials. But I got a ton of advice and teaching from a lot of people. Everybody is quite willing to share everything they know with you, which is great. There is an exceptionally nice and talented bunch of people working at that place!

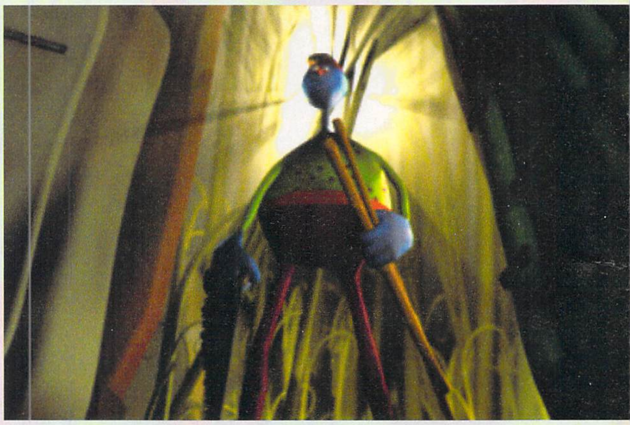
"I also got a lot of help with editing and compositing. Jamie Haggerty did the sound design, and what a great job he did! Brady Clark did the graphics for the titles and credits, which are very beautiful. I only wiggled them around a bit.

"Because I was working on downtime and after hours the production time dragged on quite a bit. I found that I had trouble working on it in very short stints, because it took me a while to get into it again every time I hadn't worked on it for a while. Just trying to remember what exactly I was doing and how...And usually 8 hours in front of the computer are enough for me. I like to see the sunlight.



"The hard part for me is to figure out the rhythm, the story telling. Trying to not forget the overall flow when you are dealing with a frame at a time, or a scene at a time was hard for me because I was directing and animating it. It is a good idea to constantly ask others their opinions, because you tend to get too close to your project to see a lot of problems. Unfortunately most people are too polite when it comes to criticizing your work."

"After the film was finished, the studio liked it enough to pay for the transfer to film. [Done by Kevin Nordine's Pixelfilms.] They are also helping to send it to festivals and to make screening copies."



Tooling the Trap

As for the tools, Krätzner used studio staples, "LightWave, obviously," she says. "Avid and Razor for editing. An In-house Player for looking at my renders. I love Photoshop. Then Digital Fusion for post, a little bit on Flame. I definitely used metaballs, Puppet Master, Steamer.

"I learned as I went along. And I got a lot of help from my friends. Figuring out nurbs and Puppet Master must have been the most useful modeling hints I got. For lighting, somebody taught me a trick to get specific shadow shapes in the right places. Often someone would do a little bit of work on it for me; then get pulled off to a job, and I would eventually refine it on the basis of their work."

Independent Character

Creating an enduring character concludes Krätzner "is what an animator thinks about all day long. Basically you are like an actor, acting through your animated character and the same principles apply that apply to acting. You have to have an idea of what is going on inside the character and find all the subtle little things that are contained in body language and expressions."

Ruminating over animating her independent short, Krätzner admits, "Animation is pretty addictive. If you are *that* kind of person you'll just put in hours and hours to create the perfect two seconds. A more useful talent, that I unfortunately don't have, is to convince others to put in hours and hours of work for you. You don't need massive amounts of expensive equipment if you have a good idea. Sometimes it is fun to find ways to work around the lack of equipment. With *The Rat Trap* I had access to anything you can dream of, which was very nice, but it makes it harder to stop refining it forever and actually finishing it."

Krätzner's latest creation is a baby girl. "Right now I am making mobiles and cuddly toys for my little daughter. I can imagine that some of the designs for those are going to turn up in an animation at some point. I actually think I might do something for kids." NT

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Web #102

The word **animate** *means "to give life or fill with spirit,"*

ROGUES'

The soul of any animation depends on the charisma of the characters, the strength of the story, and the adroitness of the

CHARACTER: Marlino Brandocelli©

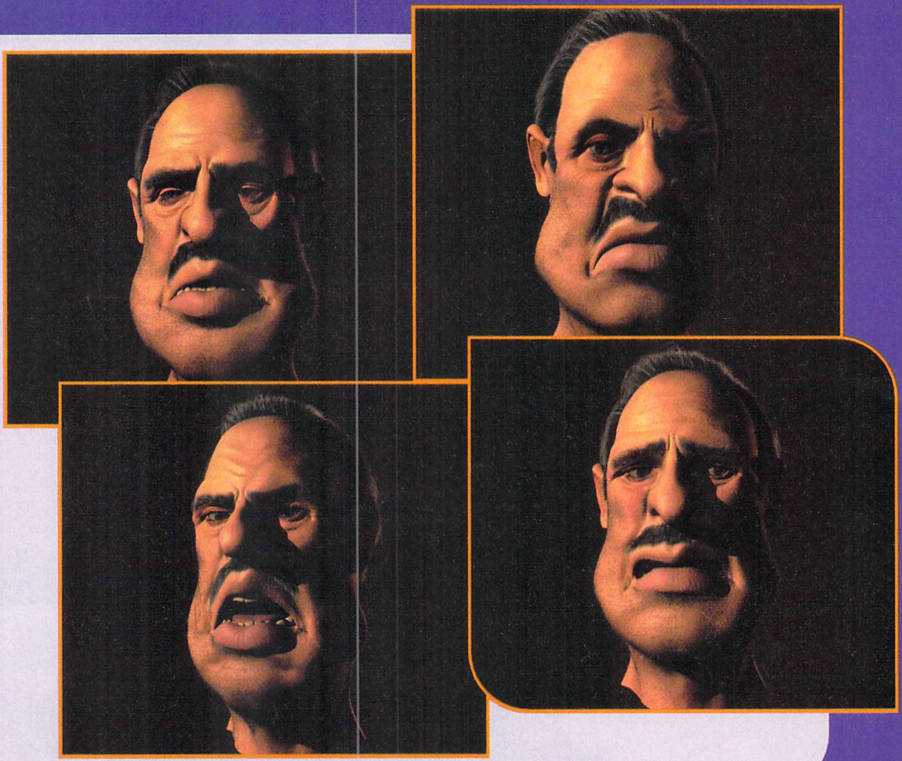
ARTIST: Frank Browne

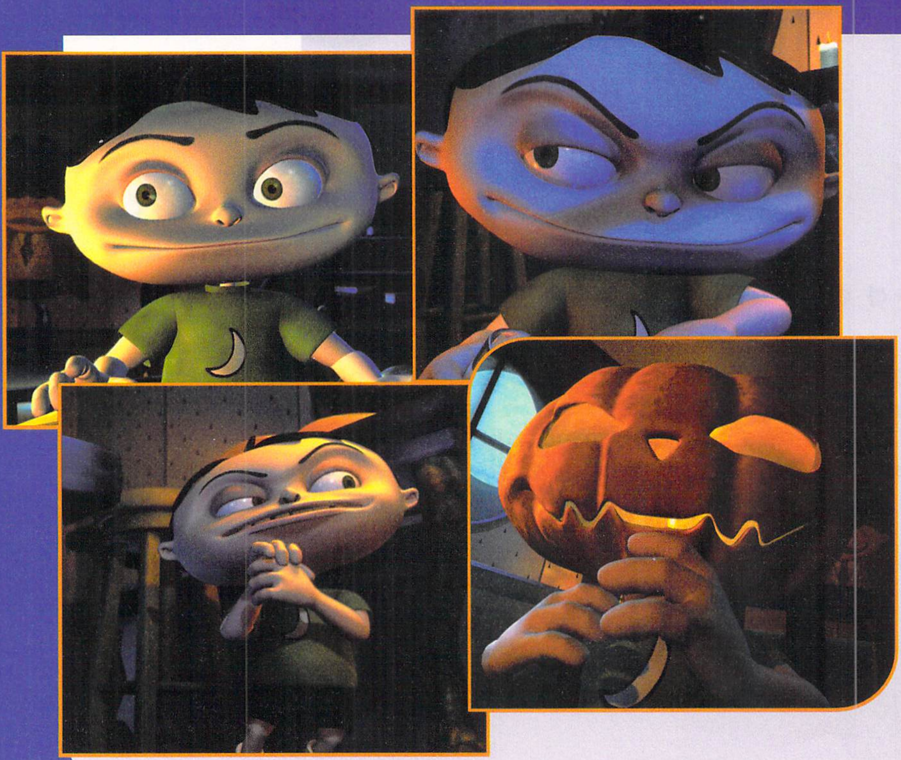
DESCRIPTION: Marlino Brandocelli© is my interpretation of a "Brandoesque/ Godfather/Col.Kurtz" type character.

TECHNICAL: I gathered all the reference material I could find on Marlon Brando and began modeling in LightWave [6]b. I roughed out the head in around four hours, and spent another day tweaking and refining the model to get the "gist" of the character. The morph targets were completed in three days.

The skin textures started with a template created with Ernie Wright's "Unwrap" plug-in. The template was loaded into Photoshop, where all textures were painted - one color map, one specular map, and two bump maps for the skin.

The hair was created and styled in Joe Alter's Shave and a Haircut.





CHARACTER: Charlie Pumpkinhead

ARTIST: Paul Allen & DNA staff

STUDIO: DNA

DESCRIPTION: I wrote a short narrated poem based on a character idea and we made it into a two-minute animation. Charlie has a magic power to turn his head into a pumpkin during Halloween. He does this to scare other children and then grab and eat their candy.

TECHNICAL: The modeling and animating was a group effort of the DNA staff. The project was a test bed for new tools and techniques. (We were experimenting with a pre-release beta of LW [6].) Our modeling department used the native Endomorph functionality to build all of Charlie's facial targets in one model, then ported out individual morph targets to Magpie Pro for lip sync.

and is derived from the Latin **anima** *or “soul.”*

GALLERY

animator. The artists featured in this exhibition demonstrate a few of the rich and spirited possibilities of characters.

CHARACTER: **The Dentist**

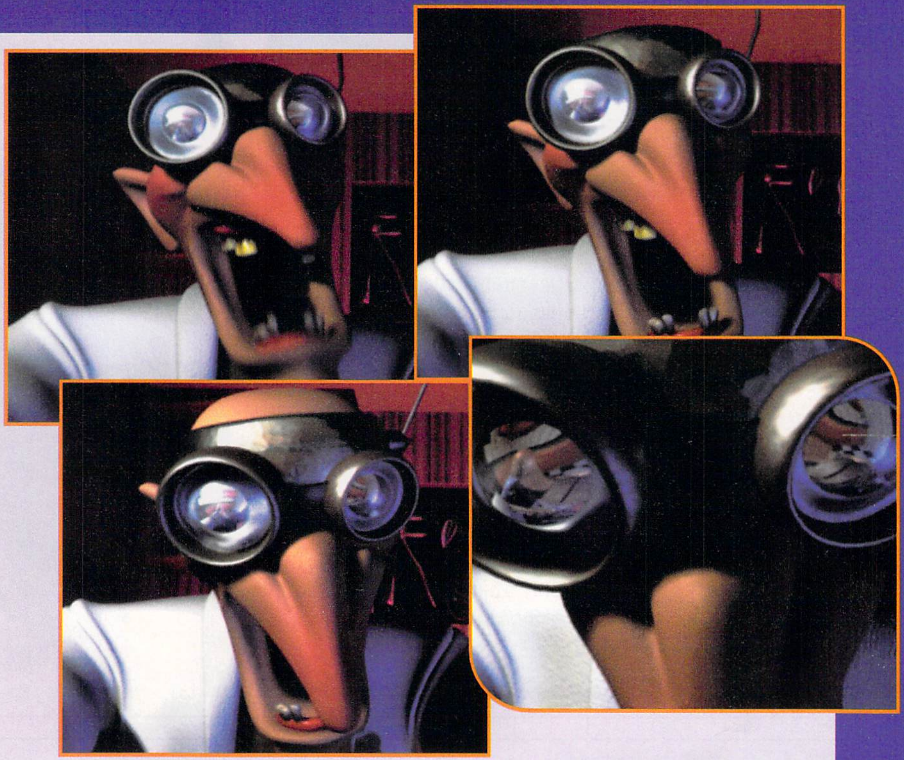
ARTIST: Chad Lee, Rodney Olmos

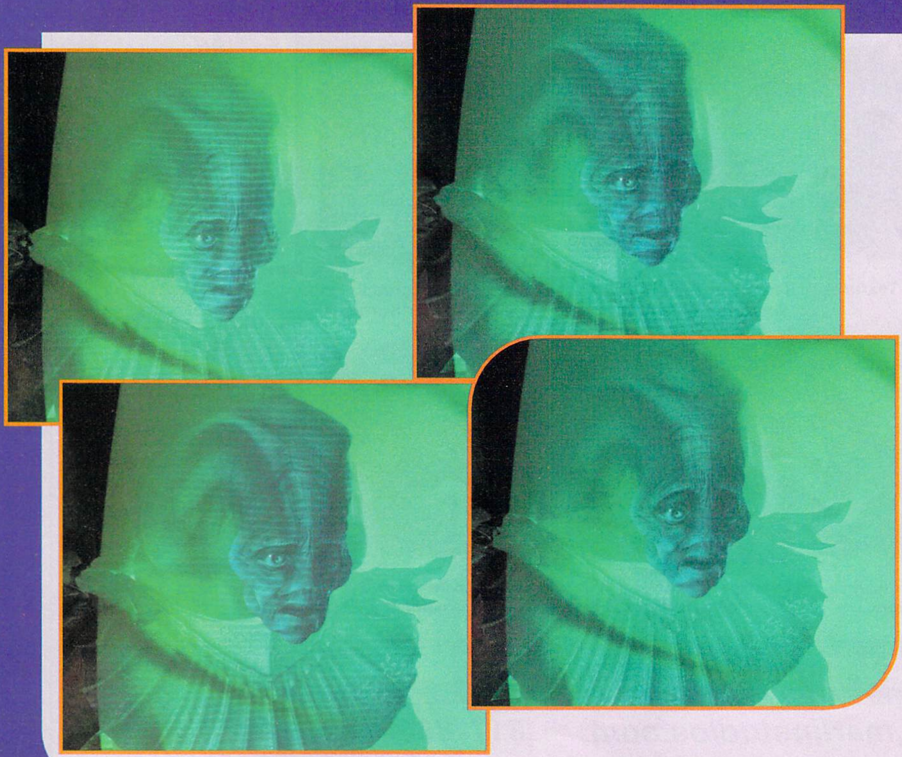
STUDIO: Studio 4D1

DESCRIPTION: In this scene, the Dentist inspects the boy closely, then rears back and laughs, showing us his rotten teeth.

TECHNICAL: After sketching a hideous scientist, I had my friend, Rodney Olmos, model him. I then took the model and used MetaNURBS to finalize the look. The textures are amazingly simple as I didn't have a lot of time to produce the entire film, so modeling time and texturing were kept to a minimum.

The bones setup was done in a day. He was animated using forward kinematics.





CHARACTER: Clinko

ARTISTS: Taron, Akira Orikasa;

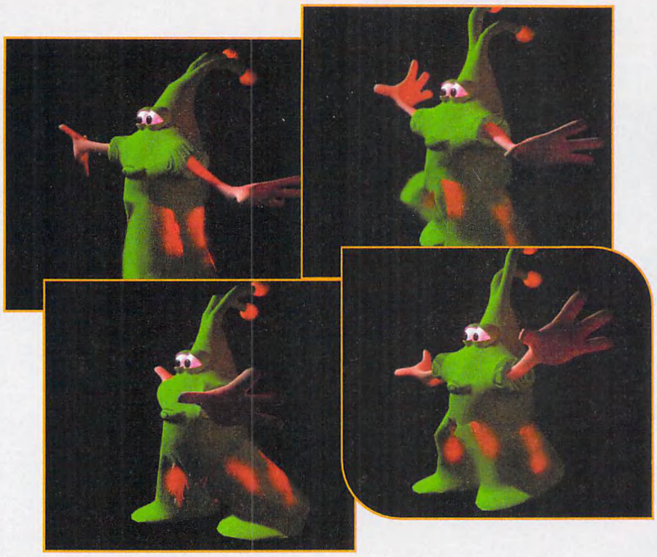
COMPOSITING: David Ebner & Ron Honn

STUDIO: Computer Cafe

DESCRIPTION: Clinko is a holographic character in Warner Brother's *Battlefield Earth*.

TECHNICAL: He was modeled and rendered in LightWave and animated in project:messiah. Based on a 2D sketch, Clinko was designed to be highly realistic. The hologram effect required special lighting achieved mostly with reflection maps.

Project:messiah's Softbody dynamics and expression system helped to create the skin motion and to automate the secondary animation. All lip-synching, facial expressions, and body movements were hand animated with messiah's bone “muscle” system. His cloak was animated with Motion Designer. The final holographic look was achieved with Adobe's AfterEffects and Digital Fusion.



CHARACTER: Harold the Harlequin

ARTIST: Graham Toms

STUDIO: NewTek

DESCRIPTION: Harold is a chap with eclectic tastes in architecture friends and almost everything else. To communicate he refuses to speak but prefers to mime in the style of a melodramatic Victorian stage actor. The island he has constructed is based on his wanderings around the world and his memories of grand architecture from neo-classical to Moorish.

TECHNICAL: Harold originally was sculpted with Plasticine. Then I modeled him in LightWave using MetaNURBS. Harold's geometry has been kept simple to contrast with the complexity of the architecture and props in the scene. The textures for Harold are yet to be finalized.

CHARACTER: Erishkagel

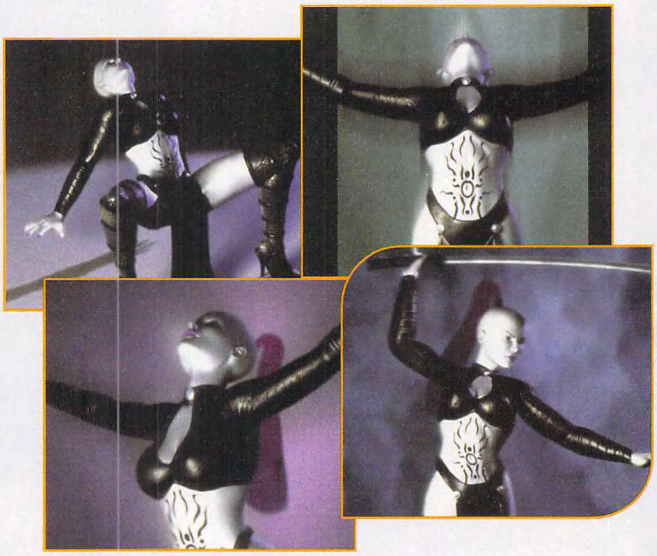
ARTIST: Tareq

STUDIO: Foundation Imaging

DESCRIPTION: Erishkagel, Queen of the underworld from Sumerian mythology, will be a prominent character in my upcoming animation.

TECHNICAL: The character was built with subdivision surfaces in LightWave 5.7 - 6.0. Modeler in [6] is a vast improvement over earlier versions. Editing in the OpenGL preview window made it much easier to make complex characters and edit key areas. I surfaced her using Photoshop painted texture maps and LW stock procedurals.

I used project:messiah for her bone setup and rendered her in [6] using Area lights. I used Joe Alter's Shave and a Haircut for her hair. Most of the images were touched up in Photoshop.



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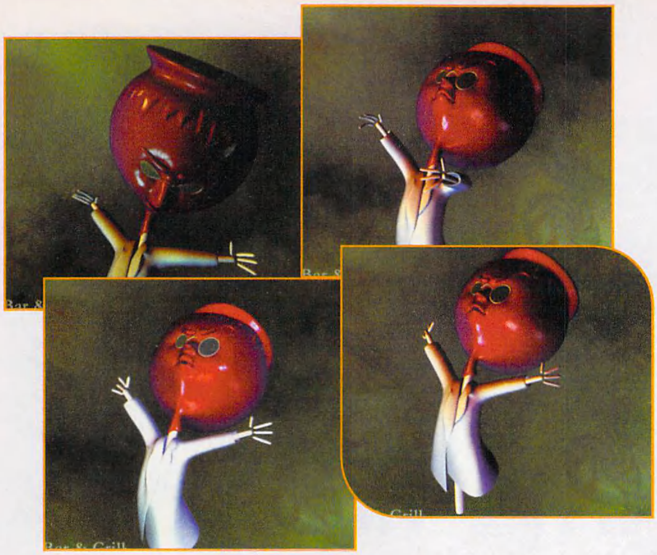


CHARACTER: Doc

ARTISTS: Susan Ishida and Joe Clasen

STUDIO: Joe's Bar and Grill

DESCRIPTION: Doc is a candy apple turned mad scientist. As lightning strikes around him and fog fills his laboratory, Doc unveils his latest creation, a Frankenstein-type monster made of Halloween candy.

TECHNICAL: Doc was built using MetaNURBS and set up for animation with PuppetMaster and Morph Gizmo. We're re-setting it up now using project:messiah, which opens up a lot of wonderful new possibilities. Doc's geometry is fairly simple and the texturing is minimal; so we're relying a lot on theatrical lighting to set the mood, and body gesture to tell the story.

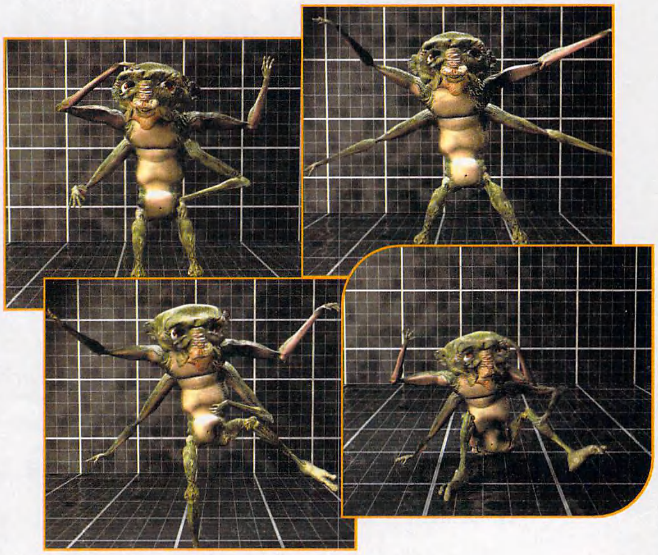
CHARACTER: No name, affectionately called "The Little Homunculus."

ARTISTS: Modeler & director, Jim Hardison; animator, Hardison and Patrick Van Pelt; texture painter, TJ Nabors.

STUDIO: Will Vinton

DESCRIPTION: From a short film, a magical fairy creature, safe in the orderly routine of his sheltered Victorian green house, but longing for something more, is propelled on an adventure beyond the glass walls of his home. He discovers that the world is greater than his narrow scope has allowed him to see, and that despite the danger and wild disorder, it holds beauty and sweetness that make life worth while.

TECHNICAL: Modeled in LightWave and animated in project:messiah.



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Plugged In

LIGHTWAVE ADVANCEMENTS THROUGH PLUG-IN SCRIPT WRITING

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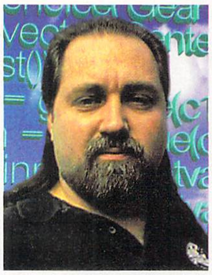
Swarming with LScript v.2.0

The Next Generation

LightSwarm6
Takes Wing

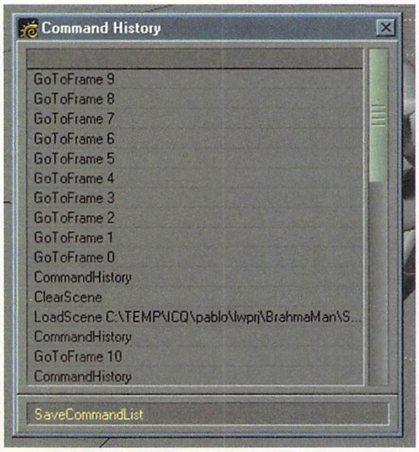


by Bob Hood

After years of development, LightWave [6] has finally hit the streets. Not surprisingly, along with it comes a new version of LScript, version 2.0. Fear not, while LightWave [6] is in many ways an entirely new animation system, LScript v2.0 is not as radical a departure from the LScript you have come to know. We'll explore some of the new capabilities of LScript v2.0 by creating a swarm of lights in Layout using Generic LScript.

The LScript Evolution

Many new features are available through the LightWave [6] plug-in API, and changes have been made within LScript v2.0 to reflect this. One such feature is the addition of a Command Sequence system to LightWave Layout. The Command Sequence system, which has long been available in Modeler, is a mechanism that essentially allows a plug-in to "push" buttons on the application's user interface. By having a means to access these interface elements, a plug-in can do nearly everything a user can do during an interactive Layout session.



```
GoToFrame 9
GoToFrame 8
GoToFrame 7
GoToFrame 6
GoToFrame 5
GoToFrame 4
GoToFrame 3
GoToFrame 2
GoToFrame 1
GoToFrame 0
CommandHistory
ClearScene
LoadScene C:\TEMP\ICQ\pablo\lwprj\BrahmaMan\S...
CommandHistory
GoToFrame 10
CommandHistory

SaveCommandList
```

Generating a Layout Command Sequence listing

The Command Sequence system (hereafter referred to as "CS") in Layout is only available to two plug-in architectures: Generic and Master. Of course, the Generic LScript plug-in has been part of the LScript plug-in suite since its inception. The Master Class plug-in architecture, however, is new to LightWave [6], and I will likely cover it in a future column.

The Layout CS mechanism can be accessed from Generic LScript through the standard LScript function call interface. The CS functions available to the LScript Generic and Master plug-ins are too lengthy to list here (over 260 as of the first release of LScript v2.0!). However, you can generate a complete text listing of all available Layout CS functions by entering the command "SaveCommandList" into the Command History window of LightWave [6]. Figure 1 illustrates this process. I would recommend that you generate this listing, and then compare the CS function calls used in the "LightSwarm6" Generic LScript in Listing 1 to their CS counterparts in the listing generated by Layout.

Virtual Electrician

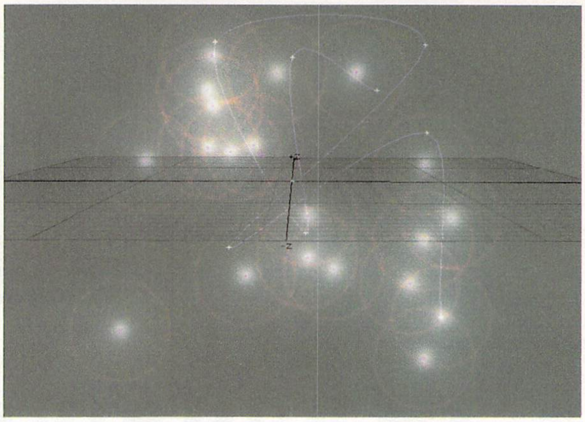
Among the 260+ new CS functions available in LightWave Layout are those that will add lights to the current scene. As of the initial release of LScript v2.0, this includes all five light types found in Layout: Distant, Point, Spot, Linear and Area. The partial Generic script in Listing 1, LightSwarm6, allows the user to generate any of these five light types. However, because some of these types are not actually visible to the camera (such as Distant lights), their usage in the LightSwarm6 script is included simply for the purposes of example.

The LightSwarm6 script in Listing 1 begins by posting a requester to the user. The user can specify such things as the number of lights to be generated, the type of light created, the bounding volume that will contain the swarming lights, and the keyframe intervals to be used when generating light motion. These operational parameters are gathered up through line 58 of Listing 1.

While many things within this script bear special note, of particular interest are the new post-conditional expressions available in LScript v2.0. Line 38 of Listing 1 illustrates one of these new expressions, conditioning the termination of the script on the result of the reqpost() call. Such post-conditional expressions are used later in the script as well. Although these new forms of expression are functionally equivalent to their pre-conditional predecessors (which are themselves still available for use in LScript v2.0), in most cases they make the script easier to read.

listing 1: Excerpt of the "LightSwarm6" LS/GN Lscript (The complete Listing 1 is posted in the Bonus Section at www.newtekniques.com.)

```
023: reqbegin("LightSwarm6 by Bob Hood");
024:
025: lightCount = 10;
026:
027: c1 = ctlinteger("Light count",lightCount);
028: c2 = ctlchoice("Light Type",lightType,@"Distant","Point","Spot", "Linear","Area"@);
029: c3 = ctlchoice("Frame range",frameRange,@"Render","Preview"@);
030: c4 = ctlstring("",rangeDisplay);
031: c5 = ctlinteger("Bounding volume (meters)",boundingVolume);
032: c6 = ctlvector("Volume center",volumeCenter);
033: c7 = ctlinteger("Key frame",keyFrame);
034:
035  ctlactive(c1,"sm_callback",c4);
036: ctlrefresh(c3,"fr_callback");
037:
038: return if !reqpost();
039:
040: lightCount      = getvalue(c1);
041: lightType       = getvalue(c2);
042: frameRange      = getvalue(c3);
043: boundingVolume  = getvalue(c5);
044: volumeCenter    = getvalue(c6);
045: keyFrame        = getvalue(c7);
046:
047: reqend();
```


LightWave [6] preview of the Light Swarm

Once the user provides the operational parameters, we can give the light hive a good "whack" and stir up the swarm.

A Little Light Rendering

It is an exciting development for LightWave plug-in and script developers that you can now actually add objects, such as lights and even new cameras, to Layout using a Generic plug-in. We'll use this new mechanism to generate the swarm of lights. However, before adding these lights, the LightSwarm6 script adds a new Null object to the scene that will act as the parent object for all the lights generated. This will make it easier to move the swarm around in the scene if you wish.

Line 60 of Listing 1 invokes the AddNull() CS command, generating a new Null object in the current LightWave scene with the name "LightSwarm_Parent". This name will be used later for parenting each light as we create it.

On line 62, we use the new LScript v2.0 foreach() iteration construct, which is intended to simplify the use of iterations (loops). The variable "x" is provided as the recipient of each iterated value of the "lightCount" variable. You can use many integral data types with the foreach() construct, including LScript arrays. In this case, the "x" variable will hold successive values from 1 to "lightCount" each time through the loop.

Line 64 of Listing 1 constructs the name of the light. This is simply the name "Light_" with the numeric value of "x" appended to it. You can alter this to any name you wish, or even add a new control to the requester panel to allow the user to provide their own base names for the generated lights.

Lines 66-70 add the new light to the scene, based upon the type of light selected by the user. Note here that post-conditional expressions are employed.

The CS system operates on a "currently-selected-object" principle. This means that most of the CS commands you issue from your script will not explicitly specify an object as the target. Which ever object is currently selected in the scene (light, mesh, camera, etc.) will be the recipient of the effects of the command. Because of this, the newly created light from one of the CS commands executed in lines 66-70 will be selected by default. However, for the purposes of example, I have placed an explicit selection of the light (on line 72) immediately following its creation. This light will then be the target for all subsequent CS commands.

On line 73, the new light is parented to the Null object created on line 60.

Next, we set the initial position of the light at some randomly selected location within the bounding volume specified by the user. Once positioned on line 75, a keyframe is then generated for the light at time index 0.0 using the CreateKey() command on line 78. The light is now locked down at its starting position.

Tucked in between lines 80-84 are some additional setup calls for Point-type lights. These calls enable lens flares for this type of light, and set the flare intensity to 30% (0.3).

The loop that follows (lines 86-98) gen-

• ➤ 26

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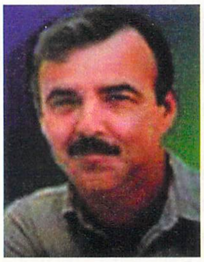
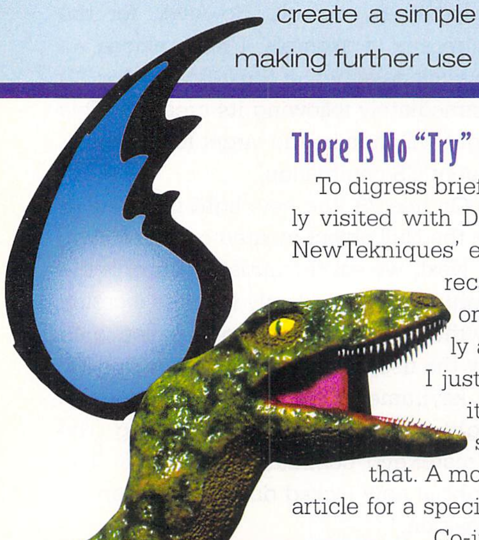


BUILDING CHARACTER

Creating Textures in Aura, Part II

by Steve Bowie

I know what you're thinking: "There he goes again – Part II already! Where in blazes is Part I?" As with the previous column, our Aura material has overflowed into two realms. Part I can be found online, in the *Aura Essentials* wing of www.newtekniques.com. In Part I, I review a few of Aura's tools as they relate to fundamental texture creation. Check it out to see how I used Aura to create a simple seamless texture. I'll be making further use of this texture in Part II.



There Is No "Try"

To digress briefly, I should tell you that I recently visited with Dick De Jong and Molly Dinkins, NewTekniques' erstwhile editing duo. I distinctly recall telling Dick over coffee, "The one area of LightWave I've carefully avoided is character animation - I just can't find the time to get into it!" Dick didn't reply. He just smiled enigmatically. He does that. A month later, I find myself writing an article for a special issue on character animation. Co-incidence?

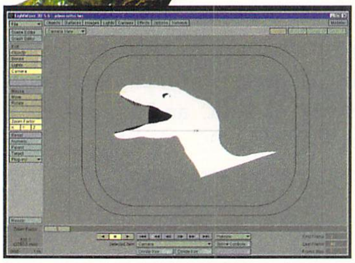


Figure 1

Protracted squirming failed to convince the editors that any other submission would do – so, here follows a partial examination of Aura's tools as they apply to cloaking a character in reality (i.e., texture mapping).

Given my so-so modeling skills, this seemed the perfect opportunity to use one of the objects from my "Dinosaurs" CD-ROM. This nice object collection (from Gruppo Iride in Italy) has been around for a few years, and is available in North America from a number of well-known NewTek product retailers. Further information on the creators and products is online at www.crebergallery.it/UTENTI/BARBAGLIO/.

The Long View

The first thing many 'Wavers do when starting a project like this is to make orthographic views (or something very close to it) of their subject. There are several common approaches: some like to use "true" orthographic views, saving screengrabs of the wireframe views in Modeler. Others render "near-orthographic" images in Layout. This is the approach I favor. I have several reasons, but the principal one is that I get a nice, uncluttered image to use as a template. The render has no grid lines or polygon edges to deal with, and I can easily use it as a "cookie cutter" template in Aura.

This isn't a LightWave column, so simply, the process involves: a) loading the object into Layout, b) minimizing perspective in the Camera view, by moving the Camera way back, and c) using an extreme Zoom factor (Figure 1). (Ed. Note - Since Steve provided 26 images for the article, they cannot be reprinted very large in the magazine. A zip file of the full-sized images is available at the *Aura Essentials* column on the NewTekniques website.)

First, I rendered a "side" view. The camera was at -600 meters on the X-axis, with a Zoom factor of 500. I saved that render as a 32bit Targa file

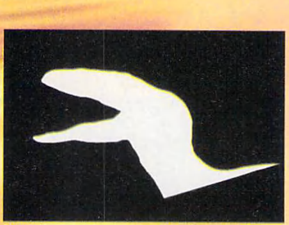


Figure 2

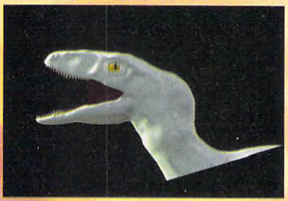


Figure 3

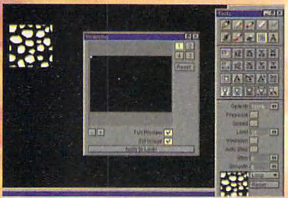


Figure 4

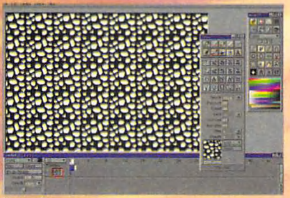


Figure 5

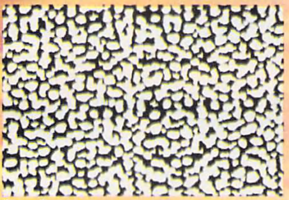


Figure 6

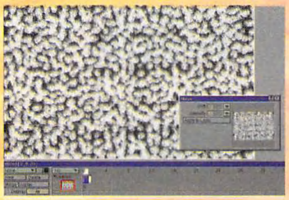


Figure 7

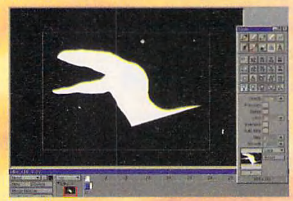


Figure 8

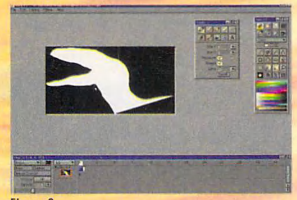
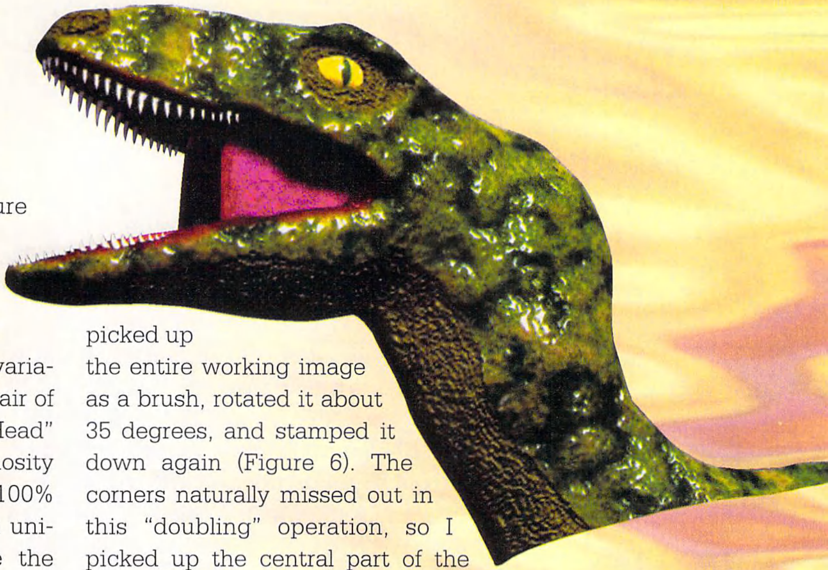


Figure 9



named “ortho_X.tga (Figure 2). Then, I moved the camera “overhead” to 600 meters on the Y-axis, and rendered “ortho_Y.tga.

Actually, I saved two variations on this theme – one pair of renders had the basic “Head” surface set to 100% Luminosity (and all others set to 100% Transparency) to provide a uniformly “flat” image, while the other pair was set to 100% Diffuse. The latter images, being shaded, are useful as background references when painting textures in Aura (Figure 3). Having done this, I was finished with LightWave for a while (though I kept Layout running in the background for occasional test renders).

Fitting a Velociraptor

Before proceeding, I wanted to finish up my primary texture - the one begun in Part 1. My goal was a nice camouflage pattern, just the thing for a hungry Raptor lurking in the dappled shade of jungle flora. Having previously created a small seamless texture, I started Aura using a D1 (NTSC) project size, and loaded my texture as a brush.

I needed to fill the screen with this brush, so naturally I turned to the [Wrapping] filter (Filters>Basic> Wrapping). I clicked on [Reset], obligating the filter to adjust to my current brush, and turned on the [Fill Screen] switch (Figure 4).

Clicking the mouse on [Apply] had the desired effect, as seen in the accompanying image (Figure 5). Of course, this is just a starting point. I wanted a much “busier” pattern, so I picked up the entire working image as a brush, rotated it about 35 degrees, and stamped it down again (Figure 6). The corners naturally missed out in this “doubling” operation, so I picked up the central part of the working image as a brush, cleared the screen [Shift k], and applied the Wrapping filter once more. A little cleanup work on the seams with a small airbrush in Smooth painting mode gave me a decent looking interim result.

The image was far too “clean” for my purposes though, so next I applied the [Noise] filter [Filters> Basic>noise], with the settings and result seen in the illustration (Figure 7). Things were really starting to shape up! I completed this phase of the job with the application of a level 3.00 Gaussian blur. I saved the resulting image as “scales.tga.”

At this point, I was ready to get down to serious work. One vital thing was to make certain the texture maps I made would actually fit their target. Now, there are as many approaches to surface mapping as there are animators – times five! LightWave boasts almost limitless surfacing options. (By the way, you'll observe that I'm using LightWave 5.6 here; as you know, LW [6] adds UV mapping, yet another approach.)

One easy yet effective way of applying textures is to use “Planar” mapping – basically projecting the texture precisely onto the object along one of the cardinal axes (X, Y or Z). As mentioned, the truly critical factor is correctly sizing the texture map in the first place. Any extraneous bits of imagery will skew things when you later click “Automatic Sizing” in Layout's Surface editor. Aura can help us out here!

Remember the orthographic views we rendered in Layout? This is where they are put to use. For the purpose of this article, I'm just dealing with mapping in the X-axis, so I loaded “ortho_X.tga” into Aura.

In the end, what we need is an image whose dimensions are just perfect for our object. Aura makes it easy! I simply pressed [b] on my keyboard to select the Brush cutting function, and dragged out a marquee surrounding the head profile in my image (Figure 8).

Then I clicked on the [Optimize brush] button (in the Brush settings requester - it's the dotted outline icon above the "chalice" at lower left - to automatically crop out extraneous transparent portions of my larger brush. That's how hard it is! Making sure Aura's Save Mode was still set to TGA 32, I stored this brush as "crop_X.tga."

Finally, before I actually started to create my textures, I loaded "crop_X.tga" into Aura as a Project, not an image - this is important! Doing this resizes the working image to the correct dimensions for all further operations (Figure 9).

Warts and Bumps and Scales

The next step was to import "scales.tga" to a new layer. I didn't scale it to the new Project size, but it would have been all right to do so. Since we want to re-use this image a few times, the key is really to do the same thing with it each time. Scale or don't scale, but be consistent! Next, I created a new layer, and "filled" it with a charcoal gray. I dragged the scale texture layer onto that new layer (Figure 10).

Having done this, I could delete the scales.tga layer. Now it was time to create my basic bump map, by dragging the scales/Gray layer onto the cropX.tga layer. After that I could delete the scales/gray layer, naming the remaining layer "bump_base" (Figure 11).

I wanted to add a little diversity to my bump map. I decided that the underside of the jaw might feature a different texture. This secondary pattern would extend down the front of the creature's neck, and perhaps also would look good added around the eyes and nostrils (I later came to regret the nostril decision, but *tempus fugit*).

To achieve this effect, I again used a freshly imported "crop_X.tga" layer as a template. I also imported my (previously created) cropped and shaded side view, positioning it below the "flat" layer, to serve as a visual aid. I set the opacity of the upper layer to 60%, allowing the shaded view to be partially seen in the background (Figure 12).

I selected [Replace] mode and the [Filled] shape tool to work with. Using the shaded image below as a reference, I drew out areas of solid color (orange, as it happens) on the lower jaw/neck area, and around the eye and nostril (Figure 13).

Switching to [Erase] mode, I right-clicked on the [Fill] tool (to access its Settings panel) and changed the Fill setting to [Color Only]. Clicking on the white part of the layer erased all but the colored shapes just made (Figure 14). I'll refer to this layer as "cookiecutter." Smoothing it a bit seemed like a good idea.

Changing to [Color] painting mode, I dragged the "cookiecutter" layer icon onto the "bump_base" layer (Figure 15).

Now I needed to decide on a second texture. I wanted something coarse and nasty looking, but with more grain than the scales already in use. I decided to use a seamless cloth texture, warped beyond all recognition. I imported said texture as a brush, and opened Aura's [Gradient] settings panel. There, I set both brush warp switches to [on] (Figure 16).

Selecting the Fill tool, I filled the orange-colored lower jaw/neck area. Because of the options selected in the Gradient panel, the "cloth" brush warped nicely to follow the jaw line and neck contours. The filled area came out rather light though. This area would thus appear elevated when applied as a bump map in LightWave. I opted to darken it, by switching to [Shade] painting mode and clicking on the [Refill] tool several times. I repeated these operations on the eye and nostril regions, finally saving the layer as "bump_X.tga" (Figure 17)

Simply applying this image to my Raptor in LightWave (as a bump map on the X axis, using Autosizing) produced a radical improvement in the appearance of my (still rather pale-faced) creature (Figure 18). I used a bump map setting of 150% in the Surface editor. So far, so good! At this point, we're only about a dozen steps away from completion!

It's Not Easy Being Green ...

Next on the agenda was a little color. I set the bump map aside for the moment, moving its layer icon down to the bottom of the stack. I created a new empty layer, and filled it with a gradient of typical "camo" colors as shown (Figure 19).

That operation provided the colors I was looking for, but of course the gradient was far

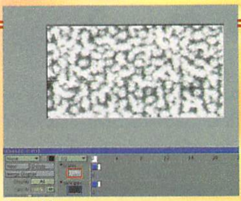
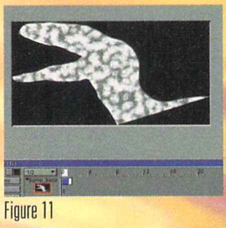


Figure 10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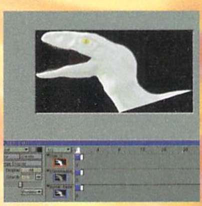
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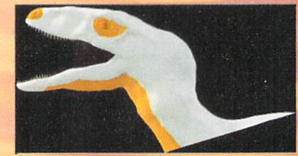
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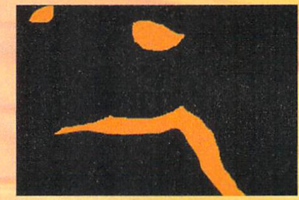
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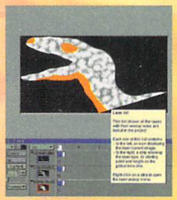
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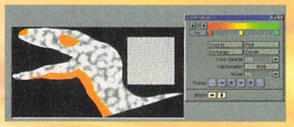
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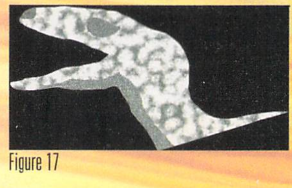


Figure 17

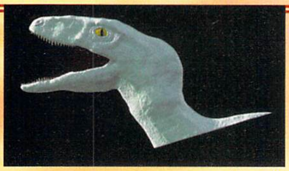


Figure 18

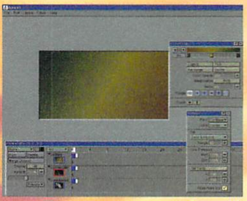


Figure 19

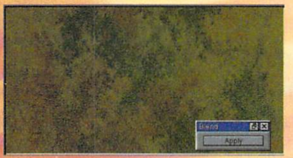


Figure 20

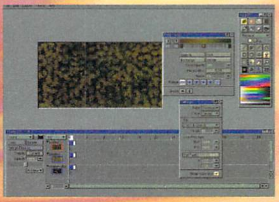


Figure 21

Figure 22

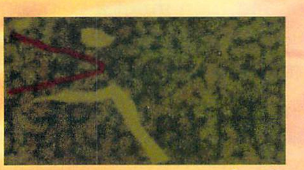


Figure 23

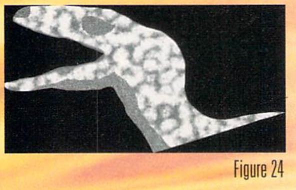


Figure 24

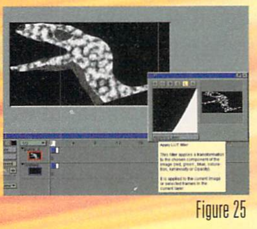


Figure 25

too smooth to be useful. A couple passes through the [Blend] filter (Filter>SpecialFX>Blend) fixed that in a hurry (Figure 20).

It was time to re-import the scales image used as a basis for the bump map (again, without scaling). In [Replace] mode, I dragged the "camo color" layer icon over the scales icon. Voila! A cool "leafy" pattern resulted. (Figure 21). Best of all, having used the same texture in the creation, these scales line up precisely with the bump map. Consequently the light areas of my color texture fall precisely on the patches of (apparently) greater elevation of the creature's surface - just what I wanted. Finished with the "camo" layer at this point, I deleted it.

My new variegated green scales were still set on a transparent background though. To remedy that, I dragged them onto a layer I had filled with dark green "paint." I disposed of the original "scales" layer, since I was finished with it. Remaining on the timeline was my new pattern of blotchy camo/scales on a darker base. Nice, but room for improvement remained.

I wanted an alternate color in the areas where there was a different texture in the bump map. I still had my orange-shaded "cookie-cutter" layer loaded, so I was able to simply change to the [Stamp] painting mode, select a lighter green foreground color, and drag the "cookiecutter" layer onto the "color_base" (Figure 22).

By now, I was pretty happy with the appearance of my color map, but it needed one last touch – lips! I dragged the shaded color view to the top of the Layers list, and created a new empty layer above it to work in. With a small airbrush, I painted a thin outline following the mouth in a suitable color. Dragging this "lip" layer onto the "color_base" layer finished the job.

By the way, you may wonder why I didn't create the color map as a "head profile" as I had with the bump map. First, it really wasn't necessary. Because I was careful with image sizes initially, the texture is sized just right to fit the object already. Too, I've discovered that no matter how careful one is, it's all too easy to be off by a pixel or two at the edges - the "excess" color in this map will compensate for any slight mismatch (Figure 23).

It seemed appropriate to make the same modification (lips) to the bump map too, so I changed to [Replace] mode, dragged out a filled medium gray box over the lip layer, and repeated the addition of "lips" to the "bump_base" layer. I saved this layer as "bump_X.tga" (Figure 24).

The bump map often works well as a starting point for several other attributes of a surface. It served nicely "as-is" for my diffusion map. This effectively increased the contrast between elevations of my creature's scaly skin. Used as a specularity map too, it adds a delicately dappled sheen to the surface. This is a nice touch that adds a subtle realism as the creature moves. I wanted a bit more contrast in the image for this purpose though, so here's what I did:

Clearing out all the layers, I re-imported the "bump_X.tga" image. I selected Aura's [Standard Look up Table] filter (Filters>Color>LUT>Standard) and set up a curve in the luminosity channel, similar to the one shown here (Figure 25). Applying this filter to the image reduced the brightness of the darker areas of the layer, which I then saved as "specular_X.tga."

Bringing It All Together

Here's the end result of simply loading the images we created into their various assignments in LightWave's Surface editor (Figure 26).

I make no claims to be a "hotshot" character animator, but I was happy with the outcome. As I mentioned earlier, any number of different approaches are possible. After all, few original color photos of Velociraptors can be seen today! Experimentation often opens up intriguing possibilities, and Aura's versatile tools make almost unlimited image tweaking relatively painless. NT

Steve Bowie, a longtime digital dabbler, enthusiastic LightWave and Aura user, also writes the Aura Essentials column at www.newtekniques.com. He owns LIGHTWORX Graphics and Video, an authorized NewTek VTNT/LightWave dealership in Toronto. You can contact him by e-mail at lightwrx@interlog.com

DO NOT ADJUST YOUR TV

Monitoring Your Video with ToasterScope

In recent years, several of the most intense conversations on the Video Toaster Flyer Mailing List have revolved around what most believe are illegal NTSC signals being fed into the original Video Toaster. Years ago during the first Toaster Revolution, many of us had the opportunity to purchase or, at the very least, use a Waveform Monitor/ Vectorscope to check the output of our Toasters.

You can achieve legal video by testing your signal with a Waveform Monitor and Vectorscope and by properly adjusting Proc Amp (processing amplifier) controls. However, when reading the mailing list, I constantly am surprised about the number of people who don't have or use a Vectorscope and are upset with the quality of their video. Obviously, the equipment was an expense that many videographers decided was unnecessary or unaffordable for their current market. With NewTek's new Video Toaster this has all changed.

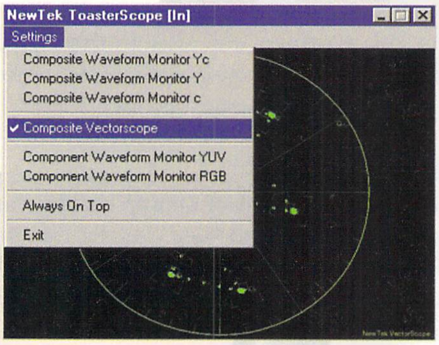

NewTek ToasterScope [In]
Settings
Composite Waveform Monitor Yc
Composite Waveform Monitor Y
Composite Waveform Monitor c
✓ Composite Vectorscope
Component Waveform Monitor YUV
Component Waveform Monitor RGB
Always On Top
Exit
NewTek VectorScope

Figure 1

Last year at NAB, NewTek made a thrilling announcement; they had designed a completely software-based Waveform/Vectorscope (ToasterScope) for their new Video Toaster. No need for another expensive piece of equipment. And since the ToasterScope can be changed from input to output without rearranging your cabling, you no longer need to recable to switch the signal you are monitoring.

In addition, Speed Razor contains Proc Amp controls that allow a multitude of adjustments to the incoming video signal. Those adjustments can be seen on the ToasterScope window in either Waveform or Vectorscope mode.

Riding the Wave

First of all let's talk about the Waveform monitor. A Waveform monitor displays the luminance level (brightness) of a video signal in a graphic manner. On an NTSC signal we are looking for a value between 7.5 IRE (Black) and 100 IRE (White).

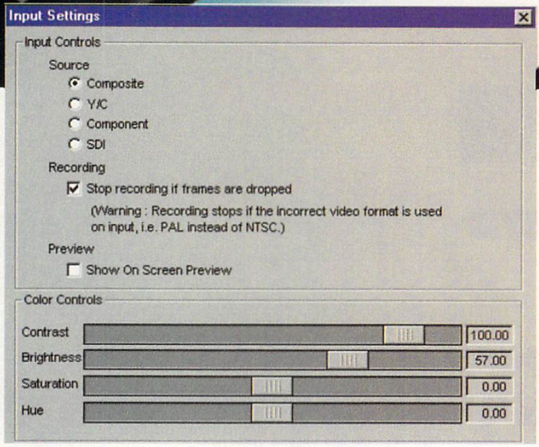
To see the waveform, you need the ToasterScope software located in the videotoaster/Programs/Common_Support directory. You will find two programs, VectorScopeIn.exe and VectorScopeOut.exe. I suggest that you create a shortcut for each on your desktop.

To begin, click on your VectorScopeIn icon and the ToasterScope should open on your desktop. Next, load Speed Razor and then input a color bar signal into the new Toaster. (For illustration, I used the color bars generated by the Sony VX-1000.) Now, highlight your ToasterScope window.

Click on [Settings] (Figure 1) and the pulldown menu shows that ToasterScope offers Composite Waveform monitoring of YC, Y or C and Component Waveform monitoring of YUV or RGB. Depending on your incoming source, Composite, Y/C or Component, you will want to pick the matching Waveform Monitor. You should be looking at a normal waveform display for the Waveform Monitor option you have enabled.

Next, to access the proc amp controls, return to Speed Razor and click [Media]. From the pulldown menu, choose [Capture] and click [Video Setup]. In the Input Settings window, pick your input source. (Figure 2)

Now by adjusting the brightness and contrast on the Proc Amp, you should be able to achieve



Input Settings

Input Controls

Source

● Composite

○ Y/C

○ Component

○ SDI

Recording

☑ Stop recording if frames are dropped

(Warning : Recording stops if the incorrect video format is used on input, i.e. PAL instead of NTSC.)

Preview

☐ Show On Screen Preview

Color Controls

Contrast 100.00

Brightness 57.00

Saturation 0.00

Hue 0.00

Figure 2

the classic stair steps of the Waveform Monitor for a color bar input. Notice that your color bars have eight bars, starting with white on the left and ending with black on the right. Each succeeding color steps up from black on the right. Typically, you want black to sit at 7.5 IRE on the Waveform Monitor and white to be at 100 IRE, with the middle bars stair stepping up.

If the signal seems to be jammed up towards the top (100 IRE) or pushed down to the bottom (7.5 IRE), adjust the brightness to keep the video from being clipped at the top or the bottom. If the steps seem too small or too large (i.e. not taking 6 steps to go from 7.5 IRE to 100 IRE), adjusting your contrast will expand and contract the bars allowing them to reach their accurate settings. (Figure 3 needs adjusting to Figure 4.)

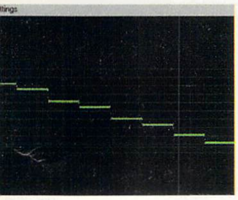


Figure 3

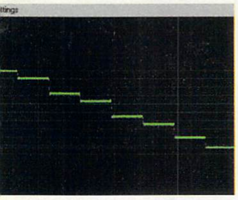


Figure 4

Vectoring the Color Wheel

The second part of ToasterScope is the Vectorscope, which measures the color information of the video signal. The circular vectorscope display has two pairs of perpendicular lines on it, with one pair 33 degrees offset from the other. However today, we are interested in the six squares located on the screen. (Figure 5) Looking at the Vectorscope like it's a watch, and starting from 12 o'clock going around clockwise we have squares labeled Mg (Magenta), B (Blue), Cy (Cyan), G (Green), Yl (Yellow) and R (Red).

When color bars are put into a vectorscope, a good signal will have its end points in the squares on the vectorscope. If the points don't make it all the way to the boxes or extend past them, adjusting the Saturation with the Proc Amp should move the vector endpoints to the correct length from the center of the vectorscope. Now, if the endpoints of the vectors are not in their appropriate boxes, you can shift them clockwise (or counterclockwise) by adjusting the Hue setting of the Proc Amp. (Figure 6 - pre-adjusted. Figure 7 is tweaked.)

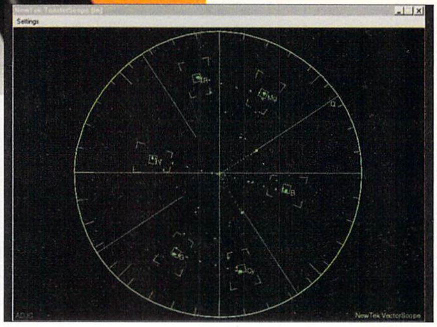


Figure 5

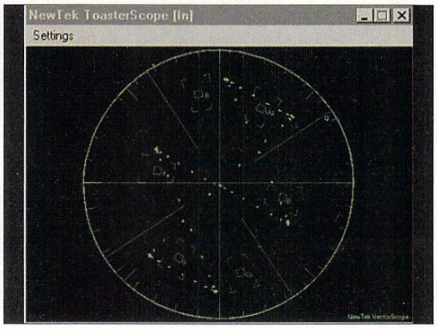


Figure 6

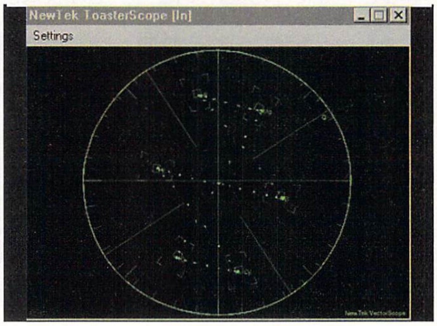


Figure 7

Now that you have learned to adjust color bars, you probably want to input a couple different sources into the ToasterScope and practice adjusting their color bars to spec. In addition, playing with the Proc Amp can give you some interesting special effects, which maybe useful for your next video.

So if you remember to put color bars on the front of each tape and adjust your bars to the correct values with your ToasterScope, you will send better video into your system and output a better signal for your final product. In addition, by properly using ToasterScope, matching video from a number of different sources quickly becomes a much easier task

I even use the ToasterScope on the new Video Toaster, (instead of my old DPS vectorscope), to check signals going to and from the Flyer and other pieces of equipment. I feed the video through the ToasterScope first and use Speed Razor's Proc Amp controls. I don't need an extra monitor or cables in this setup and its much easier to control the Speed Razor Proc Amp than the one on my TBC.

Enhancements for 2.0

At NAB and SIGGRAPH, NewTek demonstrated the 2.0 software for the new Video Toaster, and it brought enhancements in all areas including the ToasterScope, or Toastascope as they were calling it. First of all, with the new skins technology the new Vectorscope can look like a classic Tektronics rack-mount vectorscope on your screen. Second, in addition to being able to look at either input or output, 2.0 allows you to use the Vectorscope on the preview channel as well. Also the new Vectorscope has less overhead, and offers a full 60 field view of the video being sampled. With enhancements to the Proc Amp, especially in regard to the new Switcher module, you will be able to save settings for inputs, allowing setups for individual sources to be reused whenever desired. [Ed. Note - Of course, until 2.0 is out the door, these features could change.]

If you're looking for more information about video test signals, you may want to invest in Keith Jack's *Video Demystified*, a great reference for the digital videographer. NT

FOR YOUR EYES ONLY

An Excerpt from "Inside LightWave [6]"

by
Dan Alban

The following is an excerpt from Chapter 10 of *Inside LightWave 6* by Dan Ablan and New Riders Publishing. We decided the best way for you to judge the quality of the book was to give you a sample to read. Of course, the layout and formatting in the magazine does not mirror the book. We have included the Table of Contents so you can see the scope of this 1075 page tome.

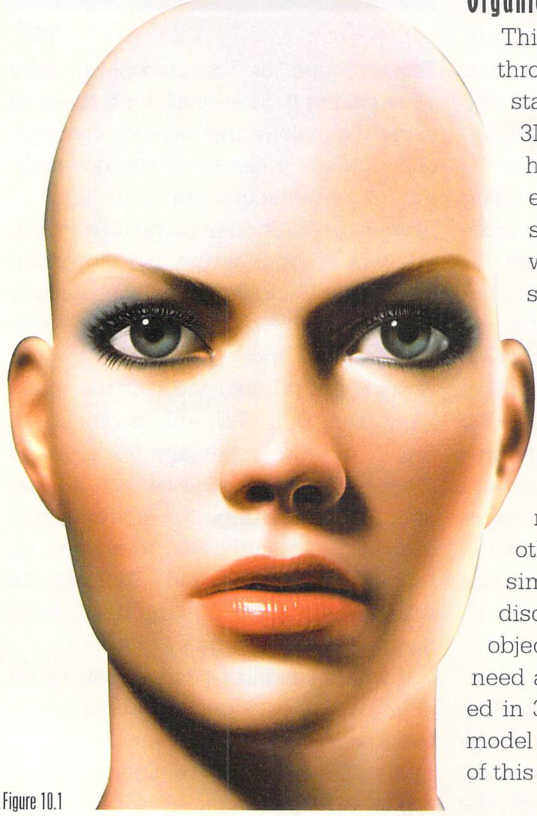


Figure 10.1

Organic Modeling

This chapter will carefully guide you through a project containing all the stages required to build a realistic 3D model of a young woman's head. The tutorial consists of several parts, and it might take you some time to complete. It deals with advanced modeling issues, so you should be fairly comfortable modeling with LightWave 6's toolset before tackling it.

Organic modeling is the process of creating objects that can't be created with only primitive shapes. Buildings, roads, computers, and many other objects can be built with simple boxes, balls, cones, and discs. But more organic or natural objects, such as the human form, need a different approach to be created in 3D. Figure 10.1 shows the cover model of this book, which is the subject of this chapter.

****

Building the Eyes

The first part of the face you're going to tackle is the eyelid area. But before starting the actual skin mesh, you will be building an eye object. It's much easier to shape the eyelids properly if you have an eye in another layer to make sure the lids match up properly.

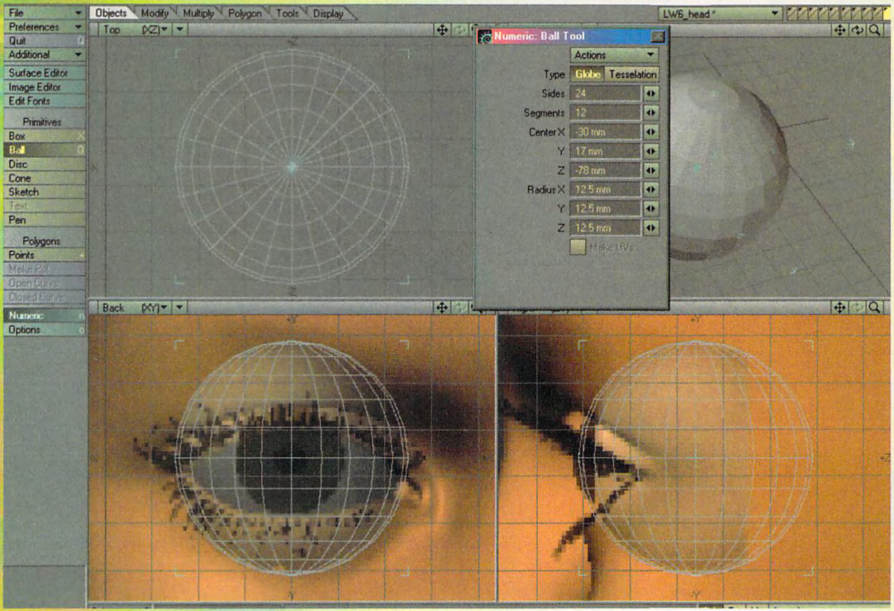
Exercise 10.2 Modeling the Eyeball and Cornea

1. Close the Box tool if you haven't already, and then click Layer 2 and select the Ball tool.

2. Using Figure 10.6 and the background images as a guide, drag out a sphere over the left eyeball. It should have an approximate radius of 12.5mm on all three axes.

   Note: You can hold the Ctrl key while creating the ball to force Modeler to create a perfect sphere. Also, if the background images seem too bright for you, remember that you can adjust the contrast and brightness in the Backdrop panel.

3. Rotate the sphere by 90 degrees on the X axis so that its poles face down the Z axis. This will facilitate making the pupil and iris later on. Or, you can place the mouse pointer over the center of the object in the right viewport and press the r key to instantly rotate it 90 degrees. Conversely,


File
Preferences
Quit
Additional
Surface Editor
Image Editor
Edit Fonts
Primitives
Box
Ball
Disc
Cone
Sketch
Text
Pen
Polygons
Points
Numeric
Options
Objects
Modify
Multiply
Polygon
Tools
Display
Top
Back
LW6_head

Numeric: Ball Tool
Actions
Type: Globe | Tesselation
Sides: 24
Segments: 12
Center X: -30 mm
Y: 17 mm
Z: -78 mm
Radius X: 12.5 mm
Y: 12.5 mm
Z: 12.5 mm

Figure

pressing the e key instantly rotates it –90 degrees.

4. Press q and name the sphere Surface Left Eyeball.

It's generally convenient later in Layout to have a separate cornea surface (the shiny outer coating of the eye), so that's what you're going to make next.

5. Select and then copy and paste the eyeball sphere.

This will leave you with two copies; one of them selected. Switch to Polygon Edit mode from the selections at the bottom of the Modeler screen.

6. Press q to change the surface name of the selected polygon. Call it Left Cornea.

7. Next, select Smooth Scale from the Tools tab and scale this surface up by .25mm, which will leave the cornea slightly lager than the eyeball.

It's important to have the eyeball selected first, before you copy and paste. Otherwise, when using Smooth Scale, you'll be sizing both copies of the eyeball, not just the cornea.

A real cornea has a large bump where it covers the front of the eyeball over the iris, and it's important to model this feature. The change in curvature over this bump is the reason the eye tends to catch specular highlights from light sources most of the time, and it works the same way in the virtual 3D world. A highlight in the eye helps give the illusion of life to a 3D character.

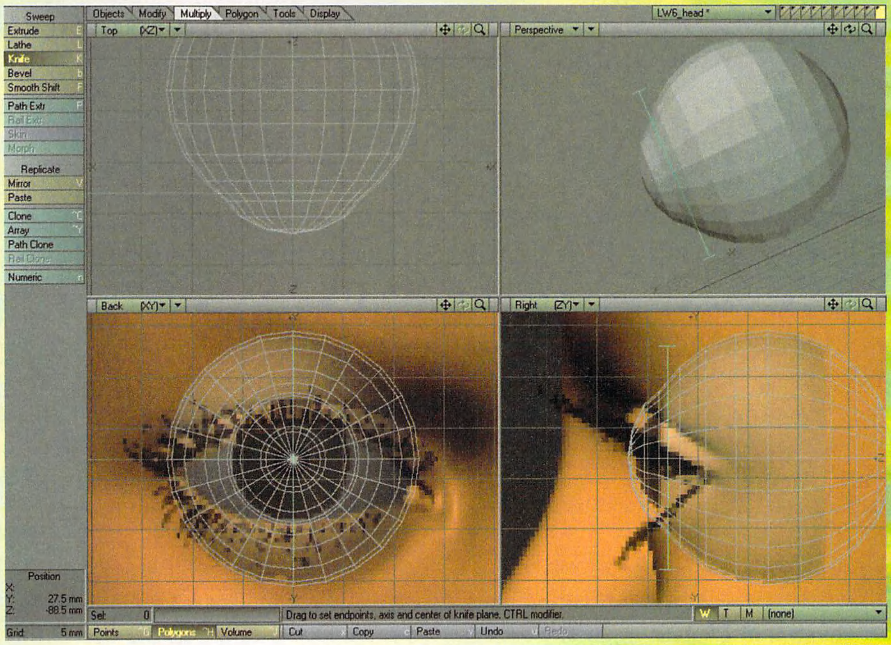
8. To create the bump, deselect any polygons that are still selected, then select just the first two bands of polygons that face into the –Z axis for the cornea. The selection is easier in the right viewport. From the Multiply tab, use Smooth Shift to multiply the selected polygons with an offset of 0. To Smooth Shift with an offset of 0, right-click directly on the selected polygons.

9. Move these polygons –1.5mm on the Z axis and scale them by 80% on both the X and Y axes, making sure your cursor is centered on the cornea on the Z axis. You want the cornea to sort of bubble out in front of the eyeball.

Note: You might want to set Grid Snap to None under the Units tab in the Display Options panel. This will help you precisely size and move polygons in small amounts.

10. Now select the front three rows of polygons (the two rows you adjusted and the third row you created by Smooth Shifting) and scale them on the X and Y axes by 105% (again, make sure the cursor is centered on the cornea). This will help ensure that the cornea is located outside, or around the edge of the eyeball.

11. Select the entire surface from the Polygon Statistics panel and use the

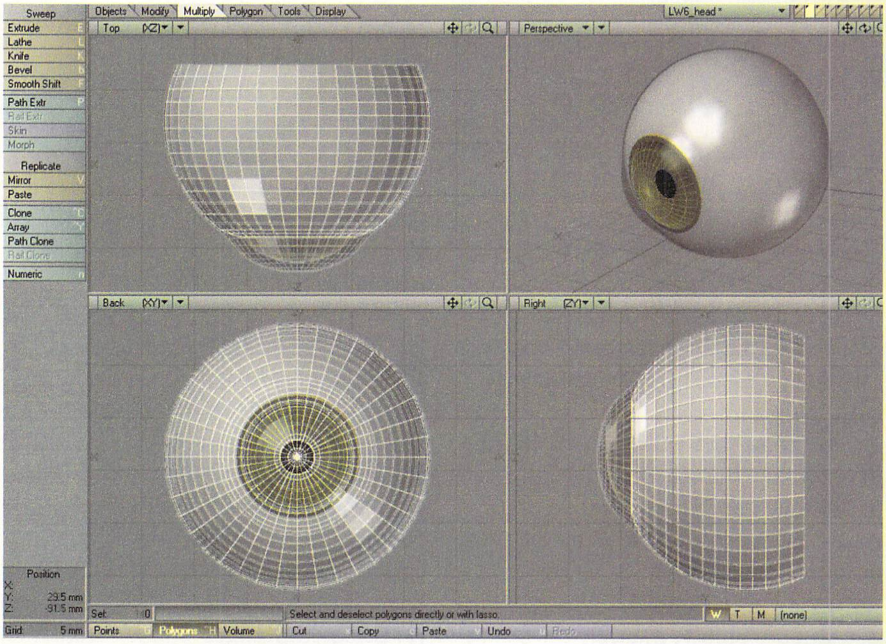

Sweep
Extrude
Lathe
Knife
Bevel
Smooth Shift
Path Extr
Rail Extr
Skin
Morph
Replicate
Mirror
Paste
Clone
Array
Path Clone
Rail Clone
Numeric
Objects
Modify
Multiply
Polygon
Tools
Display
LW6_head
Top
Perspective
Back
Right
Points
Polygons
Volume
Cut
Copy
Paste
Undo
Redo
W
T
M
(none)

Position
X:
Y: 27.5 mm
Z: -88.5 mm
Grid: 5 mm
Sel: 0
Drag to set endpoints, axis and center of knife plane. CTRL modifier.

Figure 10.6 To place the eye, start by dragging a sphere over the left eyeball.

Knife tool to slice vertically just behind the third row of polygons, as in Figure 10.7.

This will add some definition to where the bump blends back into the sphere of the eye. It will also help the smoothing over the front of the cornea.


Sweep
Extrude
Lathe
Knife
Bevel
Smooth Shift
Path Extr
Rail Extr
Skin
Morph
Replicate
Mirror
Paste
Clone
Array
Path Clone
Rail Clone
Numeric
Objects
Modify
Multiply
Polygon
Tools
Display
LW6_head *
Top (XZ)
Perspective
Back (XY)
Right (ZY)
Position
X:
Y: 29.5 mm
Z: -91.5 mm
Grid 5 mm
Points
Polygons
Volume
Sel: 0
Cut
Copy
Paste
Undo
Redo
W
T
M
(none)

Select and deselect polygons directly or with lasso.

Figure 10.7 Vertically slice the cornea object at points A and B.

12. Select the back four rows of both the cornea and the eyeball and delete them. The camera will never see this side of the eyeball, so you can safely delete the geometry there for efficiency.

13. Use the Surface Editor from the Objects tab to add some preliminary colors to the cornea and eyeball surfaces. Remember to turn on smoothing. This will help you see how your eyeball model is coming along.

14. Use the Metaform tool to subdivide the eyeball and cornea once to check that everything is smoothing off nicely. This is found by pressing Shift+d. The eyeball and cornea should look like the ones in Figure 10.8. Save your work.

Exercise 10.3 outlines the steps you need to follow to create the iris, lens, and inner cornea of the eye.

Creating the Iris, Lens, and Inner Cornea

1. Undo the metaform you created in the preceding tutorial. Hide the cornea surface by selecting the surface named Left Cornea from the Polygon Statistic panel (w). Then, choose Hide Selected from the Display tab. Select the front two bands of the eyeball in the right view. Right-click to lasso select.

   Note: You also can easily select polygons by clicking directly on the specific surface and then pressing the right bracket key (]) to activate the Select Connected command.

2. Press Shift+Z to activate the Merge Polygons command from the Polygon tab. This will merge these polygons into a flat disk. Next, with your cursor centered on the eye in the back view, scale this about 90% on the X and Y axes.

Chapter & Verse

INSIDE LIGHTWAVE [6]
0-7357-0919-X
Table of Contents

PART I
Getting Started with LightWave 6

1 __Introducing LightWave 6
2 __LightWave 6 Surface Editor
3 __LightWave 6 Modeler
4 __LightWave 6 Layout
5 __LightWave 6 Graph Editor
6 __LightWave 6 Cameras

PART II
A Project-Based Approach to Creating and Building 3D Scenes

7 __Lighting and Atmospheres
8 __Environmental Structures
9 __Environmental Lighting
10__Organic Modeling
11__Character Construction

PART III
A Project-Based Approach to Animating Scenes

12__Organic Animation
13 Inverse Kinematics
14 Expression Animation
15__LightWave 6 Compositing
16 Broadcast Animations

PART IV
Animation Post

17 Output and Rendering
18__Animation Editing and Demo Reels

PART V
Appendixes

A __Expression Applications
B __LScript and LSide
C __Plug-ins and References
D __What's on the CD

Some points will be left over after you merge polygons. To eliminate these, use the Point Statistics panel (w), and click the white plus sign (+) next to the area labeled 0 Points. This will select any points not associated with polygons. After they are selected, you can press the z key to delete them.

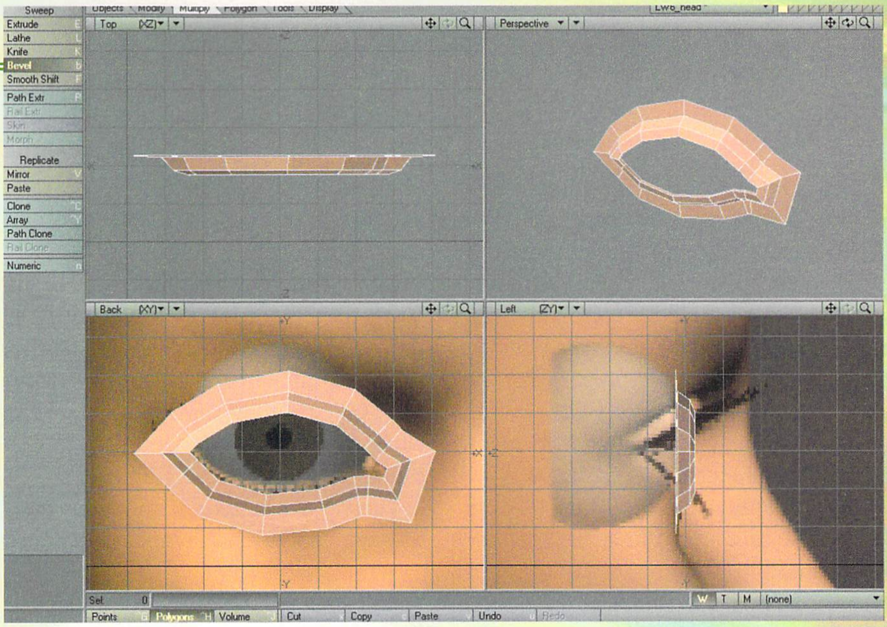
3. Change the surface name of this polygon to Left Iris by pressing the q key. Next, perform the following series of bevels with the Numeric tab to give the iris the right amount of inward curvature. Press the b key to activate the Bevel tool. Press n to activate the Numeric panel and enter the following for an inner bevel:

Shift 0mm	Inset 1mm
Shift –.25mm	Inset .25mm
Shift 0mm	Inset .5mm
Shift 0mm	Inset 2mm
Shift –.25mm	Inset .25mm

4. In the back view, cut and paste the disc polygon, reselect it, and stretch it about 130% on the X and Y axes. Make sure the Numeric panel is open, and you'll see the 130% values for horizontal and vertical factors.

5. Press the t key, and move the disc polygon back into the eyeball by about 5mm. Rename it Lens Black. This polygon stops the camera from seeing through the eyeball when it comes time to render.

Now you will create a back surface for the cornea. This is important because you will ultimately render the eye with refraction turned on.



Figure

6. Unhide the cornea by selecting Unhide from the Display tab, or by pressing the backslash key (\). Select it, copy it, hide the cornea again, and then paste in the copy.

What you're doing here is making an inside to the cornea. Right now, the surface only faces outward, and for the cornea to properly refract, an inside needs to be created, sort of like a glass.

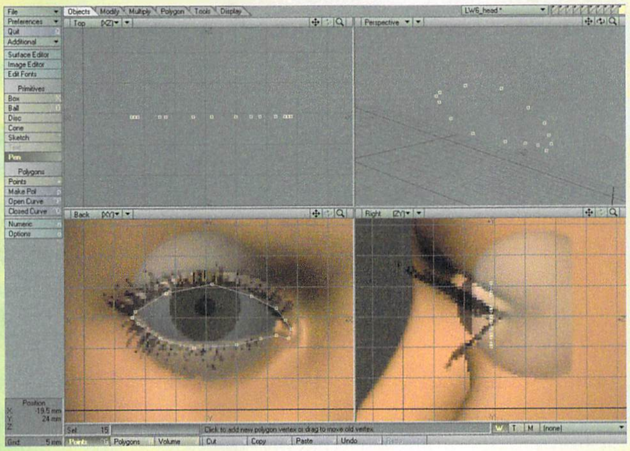


Figure 10.8 After metaforming the eyeball and cornea, they should look like this.

7. Select the copied bump and flip the polygons so that they point inward. Rename this Eye Aqueous.

8. Use the Stretch tool to scale down the Eye Aqueous until its outer edge matches up with the outer edge of the iris. Be careful where you put the cursor when scaling. Ideally the object should be the same diameter as the iris and should just butt up against it. You'll probably have to use the Move tool to properly line Eye Aqueous.

9. Unhide everything and select all the polygons, accept the Lens Black surface and Metaform (Shift+d) once to smooth out the eye.

10. Triple the newly subdivided geometry to get rid of any non-planar polygons. Save your work.

Your eye should look like the one in Figure 10.8. (The cornea in this image is dissolved out so that you can see the whole eye better.) Alternatively, compare your results with the eye layer in the final model on the CD.

Building the Eye Area

Now that the eye object is finished, it's time to build the eyelids.

In real life, the actual muscle structure that gives the eyelids their shape is a circular band. Therefore, in this exercise, you will build eyelids from a shaped circular band of polygons. Building them in this manner also will enable you to sculpt the eyelids efficiently and easily, as well as deform them in a lifelike manner when building morph targets.

brookes

·• 35 ➤

Set this surface to: Diffuse Level: 0.01%, Reflectivity: 0.5%, Smoothing: On

To ensure that the shadows cast on this object appear in the alpha channel, click on the [Advanced Options] tab, and set "Alpha Channel" to "Shadow Density." *(Note: if you're using LightWave 5.0, there is no Advanced Options tab. Instead, simply check the "Shadow Alpha" parameter for the surface.)*

By default, Layout has "Alpha Channel" set to "Surface Opacity." With this setting, the more transparent the surface is, the darker it appears in the alpha image. Hence, sections of the alpha image that are totally black are completely transparent.

In our case, we are setting "Alpha Channel" to "Shadow Density" (or enable "Shadow Alpha"). Now, sections of the objects that have this parameter set - that receive shadows - appear as white or light areas. These lighter areas will show up as dark shadows in the final composite.

The other surface that we need to work on is "Table Mirror." Set its parameters the same way, except boost "Reflectivity" to "90%," and don't check "Smoothing."

6. To avoid rendering errors with the pottery object, open the [Objects] panel, switch "Current Item" to "Pottery.lwo," click on the [Appearance Options] tab, and uncheck "Self Shadow" and "Cast Shadow." The object will not cast shadows into and onto itself.

Good! Now we can take a look at the scene again. Pressing [F9] shows us the saucer and the reflection on the table (Figure 10). If you're using "LW_QV" to view the render, you can click on the "Alpha" button to see the 8-bit alpha information (Figure 11).

These two images will be the ones that we'll add to the Compositing panel.

7. Let's set up the scene to render the frames out separately.

Go to the [Camera] panel and set the scene for:

Basic Resolution: Medium
Resolution: (Video)
Pixel Aspect Ratio: D1 (NTSC) 720x486
Antialiasing: Enhanced Low
Also, check "Adaptive Sampling" and "Soft Filter."

Then, open the [Render] panel, uncheck [Automatic Frame Advance], and click on [Save RGB Images]. Name the file "FG-ImageRGB," and select a location to save it. Then click on [Alpha], name it "Alpha," choose a location for it too. As far as image formats are concerned, I've set my RGB image to "24-bit Targa (.tga)," and the alpha to "8-bit IFF (.iff)."

Save the scene as "TableComp.lws," and hit [Render].

8. When the images finish rendering, open the [Objects] panel and select [Clear All Objects].

Click [Images] and load "Table.jpg," "FG-ImageRGB0001.tga," and "Alpha0001.iff."

Then switch to the [Effects] [Compositing] panel and:

1) Place "Table.jpg" into the "Background Image slot."
2) "FG-ImageRGB0001.tga" into the "Foreground Image" location.
3) "Alpha0001.iff" into the "Foreground Alpha Image" slot.

Press [F9] and behold the spiffy composite image, complete with the reflection of the flying saucer's underbelly in the table's mirror, and shadows cast onto the smaller piece of pottery! (Figure 12).

To take the tutorial a step further, animate the scene. Who knows - with a lot of practice, skill, and talent, you may make the next *405, The Movie.*

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plugged in

·• 15 ➤

erates motion keyframes for the new light at the intervals dictated by the user. This loop will give motion to the light in the scene, making it appear to swarm around the center point of the bounding volume. Notice that the CreateKey() command expects time index values instead of keyframes. The division expression provided as the argument on line 94 converts the integer frame value into a floating-point time index.

After all the keyframes are generated, a final keyframe is created at the next interval beyond the end of the animation sequence to ensure that the light does not stop abruptly somewhere just before the animation completes. This final keyframe is generated on lines 100-103.

The last command of the script on line 106 resets the frame scrubber on the user interface to its initial position of zero (0).

Figure 2 highlights the results of the LightSwarm6 script in the new LightWave [6] ability to display real-time lens flares.

A Commanding Presence

Once, this type of animation could only be created by manually generating scene files from scripts or plug-ins. Indeed, I have deliberately named this script "LightSwarm6" because it is not the first of its kind. Many readers will recall that some type of LightSwarm script or plug-in has been with LightWave since the AREXX days on the Amiga. However, all of them before LightSwarm6 performed their magic through the time-honored technique of scene-file writing. With the introduction of Layout Command Sequencing in LightWave [6], those days, I'm glad to say, have finally come to a close.

In this column, due to space and time limitations, I did not cover many things that are found in LightSwarm6 (such as the requester call-back functions found at the end of the script). LScript is evolving, and you can keep up with this evolution by reading the release notes available on my staff page at the LightWave Outpost Web site, http://www.lightwave-outpost.com/employees/bobh.

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LIP-SYNCHING WITH ANIMOUTH

by
Bohuš Blahut

In recent years, we have seen the resurgence of cartoon animation. In the 80's and early 90's, traditional animation was all but dead. The industry held very little regard for artistry or craft; instead, studio executives studied ledger sheets to see how many toys the last GI Joe or Strawberry Shortcake cartoon sold. Disney was still meekly releasing films, but nothing that was setting acetate cels on fire.

Then a little thing called *Ren & Stimpy* happened. Suddenly, everyone was interested in animation again. Really fantastic TV animation hit the airwaves (especially from the Warner Brothers studios) like *Batman: The Animated Series*, *Tiny Toon Adventures*, and more. Feature film animation came back with a vengeance, and all of this paved the way for the computer animation boom that followed.

animouth

A similar revolution is fomenting on the Internet. Now that animation tools on the PC have evolved to the point where the Amiga was about ten years ago (smirk), you can download a flood of amateur animation on the web. I've seen a few gems, and it's only getting better by the day.

People are using tools like LightWave, Animo, and Flash to create cartoons that are ready to download as MPEG's, AVI's, QuickTimes, or the like. Once you've experienced a few, you'll definitely want to get into the act - but how?

The Amiga has tons of great tools for animation. Does anyone remember Photon Cel Animator? Animation Workshop? Disney Animation Studio? Brilliance? The venerable Dpaint? These all made fantastic use of the Amiga's resources to create animation without rendering anything. Cartoons were quick to create, the feedback during the creation process was almost immediate, and the satisfaction immense.

Are You Talking to Me?

One thing that has eluded animators on every platform has been an easy way to synchronize mouth movement to a pre-recorded sound track. Several tools on the PC achieve this though they cost hundreds of dollars. Now, Weemsware has created an innovative Amiga program called Animouth, which offers an easy and automatic way to create synched mouth movements for animation. What's more, you even can use it with your Flyer system to output 24-bit animation with synched lip movement.

You won't believe how simple Animouth is. First, you draw your background character with its mouth at rest. Then in a painting program, you create a series of mouths in various poses and save them as an animbrush.

Next, you enlist the Amiga's built-in speech synthesizer. You may recall that its output ranges from robotic and unsympathetic to hysterical and grating. No matter - we're only using it for a scratch track of the dialogue that you'll be importing. The Amiga will "say" anything out loud that you type into Animouth. The speech synthesizer feeds information to Animouth telling the program which mouth shape to pick to match the speech.

Then just load in an external sample, tweak a few knobs and you've got automatic lip-synch. Once you try Animouth, you'll see just how cool it is.

The software has huge implications for animation work. Even if you use animation tools on another platform, you should consider porting your material over to Animouth on the Amiga. Once you've drawn out your various elements, you can have lip-synched characters in minutes. Let's take a closer look at the operations that you'll be performing inside Animouth.

After double-clicking on Animouth's icon, you'll see a simple window open up with three windows within. (Figure 1) As with many Amiga programs, the interface looks basic but it belies the power within. The three windows are marked "Character", "Act", and "Story". Beneath them what looks like a picture of a big rocky hole is in fact a picture of a big rocky hole - you drag elements into the hole to dump them - much like the Trashcan on the Workbench. It's nice to see someone depart from the slightly anemic Amiga Style Guide interface and add something new.

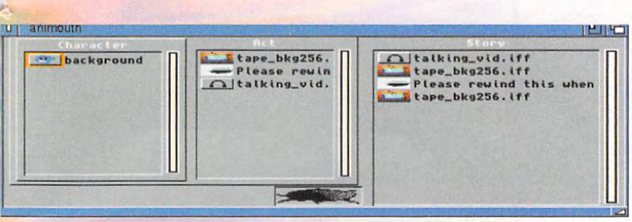


Figure 1

The three windows form a hierarchy - much like the directories and subdirectories on a computer's hard drive. In this regard, Animouth is a sophisticated manager of various elements of your animation. Before we discuss this hierarchical arrangement, it's important for us to understand what it is that Animouth is doing.

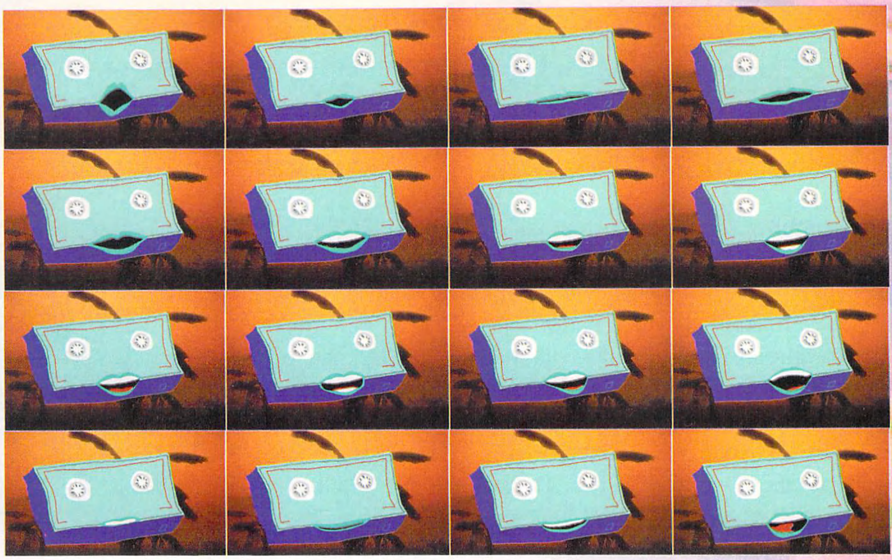


Figure 2

Hooked on Phonemes

Linguists have split up all of the sounds that the human mouth is capable of making into "phonemes" (pronounced "phone-eems). Cartoon animators take finished soundtracks and analyze the individual phonemes of the dialogue. Once an animator makes a chart of the phonemes (called a "dope sheet"), he can figure out what shape the mouth should be for a particular phoneme, how many frames to hold it etc.

As a matter of interest, Japanese animators work differently. There, animators finish the cartoon before recording any voices. If you watch Anime, you'll note that the mouth movements are more generalized to facilitate "looping" the dialogue in later.

If all of this sounds hard, that's because it is. Art and science are sometimes uncomfortable partners when your aim is to achieve something like a cartoon. Creating a "dope sheet," charting out the mouth shapes, and then of course drawing and inking all of that dialogue takes days and days.

Here are the basic steps that you'll take in Deluxe Paint to create graphics that are ready for Animouth:

1. First draw your character with the mouth at rest.

2. Save this as a single image. We'll call it "Talking_Video.bkg".

3. Make the length of the animation 16 frames. Dpaint will automatically make 15 identical copies of your character's face on all of the frames.

4. Then you draw a set of 16 mouth shapes for this character following the examples in the Animouth manual. It's important to draw the right type of mouths in the right order.

5. Pick up the mouth shapes as an animbrush and save it. Let's call it "Talking_Video.animb." (Figure 2)

That's pretty much it! If you'd like to have your character in several poses, you'll have to repeat the above steps for each one. Once you've drawn out a few lips, creating them actually can go quite quickly. If you are better with pen and pencil, you can always scan these elements into the computer - just make sure that your animbrush has the same palette as your background image.

For more inspiration, pick up the book *Cartoon Animation* (How to Draw and Paint Series) by Preston Blair. This seminal work is essential for all animators - whether on the computer or on paper. Many animators credit Blair with standardizing the mouth positions in cartoons. You'll also find plenty of other animation resource books from which you can scan pictures to trace while you're learning.

You don't necessarily have to draw your animation. Don't be afraid to experiment. Use the Toaster's framegrabber to capture a few stills of clay animated figures. Control Tower for the Video Flyer has some great utilities in it for making clay animation easy. Some short work in ImageFX will make those 24-bit frames Animouth-friendly. Then just pick up the mouths as an animbrush, and you're in business!

What about your soundtrack? Let's imagine that you've created your multitrack soundtrack on a computer. If it's in 16-bit, you'll need to knock it down to the Amiga's 8-bit format (either .iff or .8svx). You also will want to change the sample from stereo to mono to save on RAM. My soundtrack starts off with Hawaiian music, then a few words from the cartoon videocassette, and ends with the closing strains of more Hawaiian music to the fadeout.

Syncopated Rhythm

Okay, so you have your background image, your sound track, and the lips ready for synching. Now comes the arduous synchronization of the lips animation to your sound track, right? Wrong. Once your elements are drawn, the rest is easy street.

In essence, here is what Animouth will do for us. We load up the character image. We also load up the animbrush of the 16 possible mouth movements, then slip it into place against the backdrop. We type our dialogue into Animouth, and we hear the Amiga's speech synthesizer speak it aloud. While the computer is "speaking," it is picking the appropriate mouth for the animbrush. Your character is suddenly articulating the Amiga's speech! Here are the simple steps to bring all of these elements together within Animouth.

1. In Animouth, go into FILE/RESOURCES where you bring in all of the images, sounds samples, and animbrushes for a project.

2. Load the 8-bit version of your sound sample. Mine is called "Rewind_Video.8svx."

3. Load the animbrush of the mouth shapes.

4. Click the "close" gadget.

Now you've loaded your three elements into CHIP ram. You'll note a handy gauge at the top telling you how much space you have left. Since everything is in CHIP ram, the program has immediate access to all of the elements of your animation. Now we start managing these resources from the main window.

Character Analysis

Each "character" is a group of various elements. Once you've created a character and its associations, you can duplicate it and use it elsewhere in the animation. This lets you cut between various characters (like cutting between camera angles) and not have to reload and rebuild each character's elements.

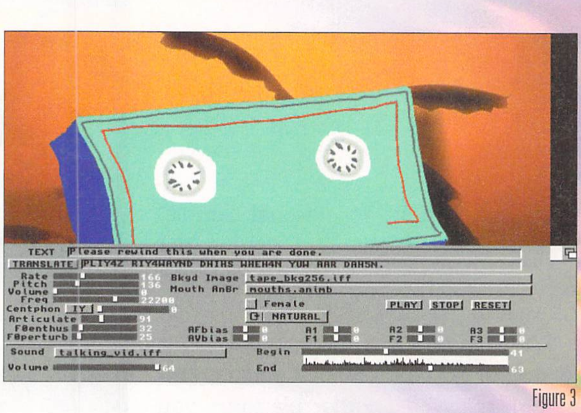
If you download the example animation that I created from www.newtekniques.com, you'll see that for this simple project, I created a single character with four "stories." One plays the audio sample, one handles the animated lip-synch of the dialogue, and two manage the background images. Now check out how easy it is for us to make all of these elements work together.

1. From the pulldown menu, select "Add Speech."

2. The screen will flash, and the Speech Editing window will open up. (Figure 3)

3. There's a pop-up menu that lets you specify the background picture from the ones you have loaded (in our case, choose Talking_Video.BKG").

4. Also choose the "Talking_Video.animb" from the AnimBrush popup list.



TEXT Please rewind this when you are done.
TRANSLATE PLIY4Z RIY4WAYND DHIHS WHEH4N YUW AAR DAH5N.
Rate 166
Pitch 136
Volume 0
Freq 22200
Centphon IY 0
Articulate 91
F0enthus 32
F0perturb 25
Bkgd Image tape_bkg256.iff
Mouth AnBr mouths.animb
AFbias 0
AVbias 0
A1 0
F1 0
A2 0
F2 0
A3 0
F3 0
Sound talking_vid.iff
Volume 64
Begin 41
End 63

Figure 3

5. Hit [F1] on your keyboard. The animbrush will flash. You can slide it into place now using the mouse, then hit [F1] again to lock it. A really clever trick listed in the manual makes this alignment a lot more automatic.

6. Type a sentence of your dialogue into the "Text" field, and hit return.

7. Hit the [Translate] button to ready the computer's speech synthesizer.

8. Now hit [F10]

That's it! The Amiga will translate anything that you type into the "Text" field as synthesized speech, and Animouth will animate the lips in perfect synch! You may have to adjust how you spell some words in the "Text" field. Try spelling phonetically so that the computer has an easier time reading your sentence. For example, to get the Amiga to say "cute", type in "cyute". The manual offers many spelling guidelines, and the skill is easy to master. Graduates of Hooked On Phonics or the television program The Electric Company will be experts in no time.

Speak into the Microphone

Once the novelty of the Amiga's speech synthesizer wears off, you'll want to put in your pre-recorded speech. Unless your character is a robot or a throat-cancer victim, you'll need to add natural sounding dialogue.

8-Bit Audio Tips

Most audio editing programs work in 16-bit (the same bitrate as a CD), but they often contain a feature to save an 8-bit version. If not, several Amiga programs can convert from many popular formats to the Amiga's native IFF, such as ProStation Audio by Audio Labs in Italy www.audio-labs.it. Also old versions of SoundForge for the Amiga will do the job, or shareware you can find on Aminet http://ftp.wustl.edu/~aminet/. "AmiSox" is one that comes to mind. I used SoundForge 4.0 for the PC to mix together and modify music from "SFX vol. 2" from Sound Ideas, and a track from Elite Video's "Narrators on Disk" CD's. I saved my finished mix as an 8bit Amiga .8svx sample at 22,100 kHz.

At this point, we're only a few tweaks away from a finished project.

1. At the bottom of the screen, use the pop-up to select "talking_video.svx"

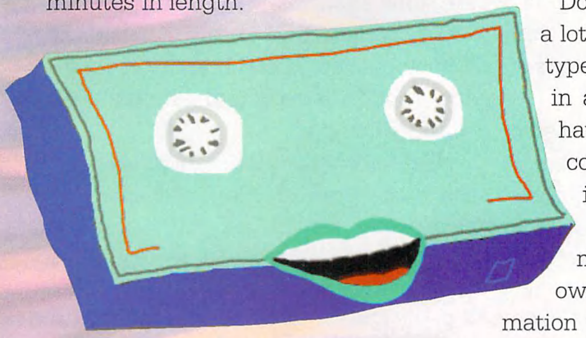
2. Hit the [Play] button or the [F10] key to hear both the speech and the sample play back.

3. Adjust the [Rate] slider to match the tempo of the synthesized speech to the sound sample. You may need to twiddle a few other knobs as Animouth's manual details

4. Once they match up, turn the Amiga's speech [volume] slider down.

Internally, Animouth is still "listening" to the speech synthesizer and moving the mouth shapes to match, while we are hearing the recorded sample. As far as your audience is concerned they're hearing the original voice sample, and watching the character's lips move in perfect synch!

Once you've finished one part of the "Story," you can go on to show other "Characters" using Animouth's great tools for overall animation asset management. With Animouth, you can easily piece together cartoons of several minutes in length.



In order to share your creation with other Amiga users, Animouth includes a freely distributable player that you can send along to your Amiga friends. Also using the Amiga's YAM email program, you can email your Animouth work.

For the non-Amiga world, run the video output of your Amiga into the input of a PC digitizing card. (If you're using a Toaster equipped system, you'll have to use the Toaster's genlocking utility. Amiga 1200 users just can use the composite out of their machine, or use an encoder/genlock for better quality). Then hit [Record] on the PC, and select [Play Once] in Animouth to dub your finished cartoon over to the PC. Compress it using the codec-of-the-month on the PC, post it on the Internet, and voila - before long you'll be reading fan email from Norway.

Animouth comes on a single floppy disc along with printed instructions as well as electronic documentation - all for $50. Most of those PC utilities that I mentioned earlier start at $500, and they're not this automatic. Just imagine the ways you could add cartoon animation to your next project. A Mr. Ed styled dialogue between an animal and a live person? A parody of *Space Ghost Coast to Coast*?

ARexx, An Amiga's Best Friend

Walter Bowie of Weemsware asked me to share that with Animouth's extensive ARexx your finished project can communicate to LightWave and have it automate the morphing between multiple mouth objects to create 3D speech. Amazing!

Don't forget that Animouth does a lot of its magic in CHIP ram - the type of RAM that you can't expand in an Amiga. Most Toaster users have 2 meg machines, so if your computer happily runs a Toaster, it will do fine with Animouth.

With Animouth and a minimum of drawing skill, Toaster owners add sophisticated 2D animation with synchronized dialogue to your studio. For the Video Flyer pilots, an included ARexx script lets you output information from Animouth into the Flyer letting you construct 24-bit versions of your animation with 16-bit sound!

Animouth can also be part of a Scala multimedia presentation. Imagine that - an on-demand multimedia narrator. I thought we were at least five more years away from Max Headroom.

Animouth has a few rough edges. While the manual is very complete, it needs a bit more organization and a few extra pages of information would add to the clarity of the instructions. Weemsware has done a better job of organizing the electronic documentation, and I found that using both in concert worked well. They are also remarkably responsive to email and phone requests.

I wish the pull-down menus listed their keyboard shortcuts. Also, I found that on my configuration, it was quite easy to clog the program by hitting the wrong key at the wrong time - small complaints when compared with what Animouth offers.

Rarely, is a developer willing to spend their creative energy on the Amiga - especially on something this innovative. It's heartwarming to have a program like Animouth come along and show the world that the Amiga has some surprises left. NT

Bohůs Blahut is the director of The Vantage Point and the creator of the Catalyzer tutorial video series. You can email him at bohus@xnet.com

Tutorial

LIGHTWAVE
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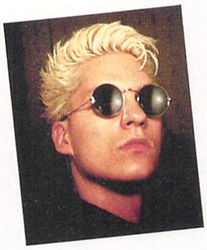


ONE + ONE = COMPOSITING IN LIGHTWAVE

by
Jared Brookes

When you began using LightWave, after you scaled that first learning curve, you probably methodically built your scene, adding in all the objects and lights and adjusting your key frames. Once every detail was complete, you rendered your sequence. A few hours later, (or if you owned an Amiga, a few days later), your animation would be ready to take to tape.

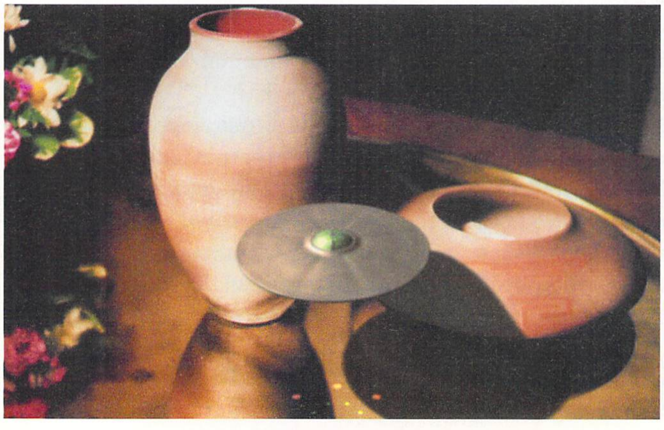
Visual effects studios often employ a different technique. They render their animations in multiple passes. And then, they pull all the elements together with compositing.

In this tutorial, we'll be covering the basics of compositing in LightWave.

First, we'll talk about the simple Front Projection method. Then we'll explore the Shadow Alpha or multiple-pass method, in which the combination of images include layers of a background image, the computer-generated object(s) and reflections, and finally the CG shadows.

Compositing within the LightWave environment allows the user to add computer-generated elements to live motion footage or still images. If your goal is to place a real human being in a computer-generated universe, your best bet is to use a compositing program like Digital Fusion or Aura.

For this tutorial, I have provided sample scenes, objects and background images, which you can download from the on-line Bonus section of the NewTekniques web site. Put the objects into a new folder called "Composite" in the NewTek/ Objects directory.



Let's get started.

1. Load up Layout, click on the [Options] tab and make sure that [Auto Key Adjust], [Auto Key Create], and [Left Mouse Button Item Select] are off. As well, be sure to set "Layout Background" to [BG Image], since we want to be able to see background images from the Camera view.

Next, open the [Camera] panel, and set the "Basic Resolution" to "Medium Resolution (Video)," and the "Pixel Aspect Ratio" to "D1 (NTSC)."

2. Go to the [Images] panel and load the image called, "BridgeShot.jpg." Note that the resolution of the image is the same as the one we just set. To load as a background image, click on [Effects], select the [Compositing] tab, and set "Background Image" to "BridgeShot.jpg."

Next, open the [Render] panel, and use some type of "Render Display." I have mine set to "LW_QV." As well, check both "Trace Shadows" and "Trace Reflections."

Press [F9] to take a look at the image (Figure 1). We'll be loading a computer-generated flying saucer into the scene. We want the saucer to interact with the image. To do this, we'll be placing a flat polygon plane over the water in the image. Then we'll project the background image onto the plane.

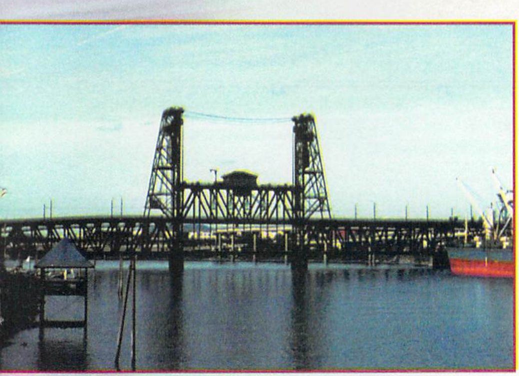


Figure 1

3. We'll construct the polygon plane object in Modeler. Either load or switch to Modeler. Select [Display] [Options] and make sure that the Unit System is set to [Metric] and Grid Snap is set to [Standard].

Next, we need to load the background image for reference. Click on [Display] [Backdrop], and [Load] "BridgeShot.jpg" into the "Z Image" slot.

The saucer object is around 40 m in diameter. So, to give us some room to maneuver, increase the "Height" of the image to 100 m. To maintain the pixel aspect ratio, you'll notice that the "Width" value sizes up to 197.4815 m.

Click [Ok], and press [1] on the numeric keypad to maximize the Face view.

Press [a], followed by [Shift] [,] three times to scale the image to a manageable size.

4. Select [Polygon] [Points], and right-click points at the following coordinates in the Front view:

X:	Y:
-75 m	-52 m
-74 m	-46 m
-67 m	-40 m
-46 m	-40 m
-46 m	-19 m
55 m	-22 m
56 m	-22 m
75 m	-24 m
75 m	-51 m

When done, hit [p] to make the polygon, and deselect the [Points] button.

Next, press [5] on the numeric keypad to show quad-view again, and tap [a] to autoscale the polygon into view.

Press [Spacebar] once to switch to [Polygons] mode, and select the polygon we just made. It should be facing into the -Z axis, like in Figure 2.

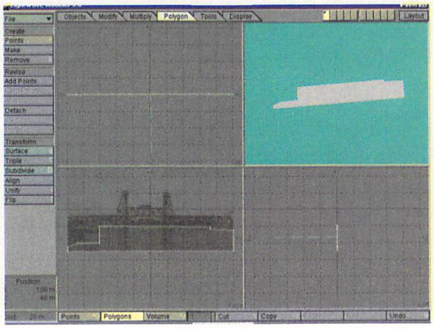
As you can see, the polygon is flat on the Face view. However, for this composite to work properly, we need to have a polygon that fits the shape of the water from the front; but is facing almost straight up towards the sky. If we were to cast shadows onto the polygon the way it is here, they would look ridiculous, since the shadow angle would be completely wrong.

5. Let's solve this problem, by selecting layer 2 as the foreground and layer 1 as the background. Then click [Objects] [Box] [Numeric], and [Make] a box using the following data:

	Low	High	Segments
X	-100 m	100 m	1
Y	-36 m	36 m	1
Z	-200 m	200 m	1

That done, select [Rotate] [Numeric], and rotate it just enough to cover the first object in the front view. Try these values:

Axis	X
Angle	5.0
Cente	0 m, -35 m, 0 m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Objects
Modify
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Polygon
Tools
Display
Layout
Create
Points
Make
Remove
Revise
Add Points
Detach
Transform
Surface
Triple
Subdivide
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Unify
Flip
Position
Points
Polygons
Volume
Cut
Copy
Undo

Figure 2

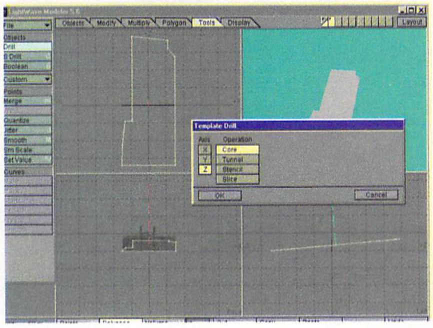
LightWave Modeler 5.6
File
Objects
Modify
Multiply
Polygon
Tools
Display
Layout
Objects
Drill
B Drill
Boolean
Custom
Points
Merge
Quantize
Jitter
Smooth
Sm Scale
Set Value
Curves
Template Drill
Axis
X
Y
Z
Operation
Core
Tunnel
Stencil
Slice
OK
Cancel

Figure 3

6. Then, choose [Tools] [Drill] and [Core] on the Z-axis. [f]lip the polygon, so that it faces up (like in Figure 3).

Finally, press [q] and name it "Water Plane." Save it as "WaterPlane.lwo" in the "NewTek/Objects/Composite" directory, and switch back to Layout.

7. Okay, load the object "WaterPlane.lwo." So far, we don't see anything.

Let's position our Camera.

Select [Camera] from the Edit menu, and [Move] [Numeric] it to: X: 0 m, Y: 0 m, and Z: -400 m. Hit [Ok] and [Enter] twice to keyframe it in place at the current frame of 0.

The object doesn't fit the water section of the background image, so we'll need to tweak it a bit.

8. Click on [Objects] from the Edit menu, press [n] for numeric, and move the object to X: 20 m, Y: -26 m, and Z: -110 m. [Ok] it, and choose [Rotate]. Set this to H: 0 degrees, P: 3, B: 0.

And finally, select [Stretch] [Numeric], and use: X: 1.9, Y: 1, and Z: 0.65. [Ok] Keyframe the object.

Whenever you create an object for a compositing scene, you will find that you undoubtedly have to tweak it to fit the image or sequence. Even if we had matched up the Pixel Aspect ratio in Modeler's Background requester, to the Layout Camera's Frame Aspect ratio of 1.333, it still wouldn't have sized properly. Even doubling the ratio would still yield an incorrectly proportioned object. Expect this when putting together a compositing scene.

The only time you'll get a good match between the object and the image that it's based on is when the object is directly perpendicular to the Camera. Or, you can lengthen the Camera's lens drastically (to reduce lens distortion), and then pull the Camera far back from the stand-in object. But with an image sequence, a very long lens makes tracking much more difficult. We'll be using the default lens.

Press [F9] to get a look at the stand-in object, and the background image (Figure4).

9. Next, we need to surface the object so that it interacts with the background image.

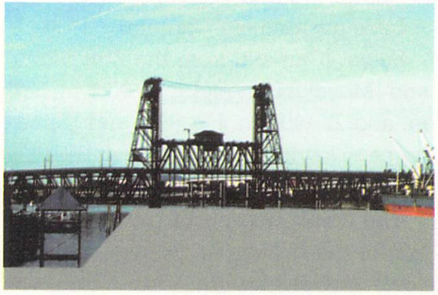

Figure 4

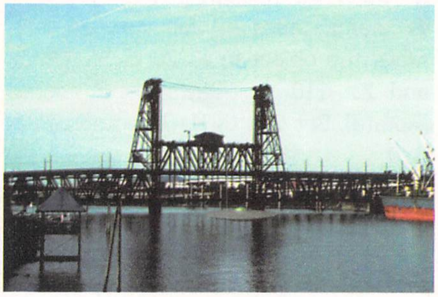

Figure 5

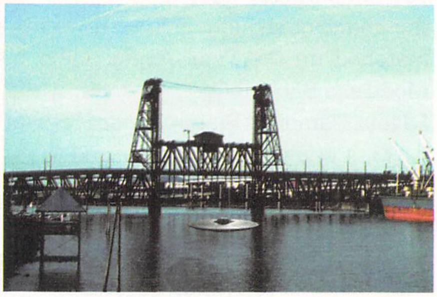

Figure 6

Open the [Surfaces] panel, make sure the "Water Plane" surface is selected, click on the [T] next to "Surface Color," and use the following settings:

Texture Type: "Front Projection Map," Texture Image: "BridgeShot.jpg."

Leave all other parameters as they are, and close the Color Texture panel.

To blend in properly, we need to adjust Luminosity. Also, for the stand-in object to receive shadows from other objects, we'll tweak the Diffuse level. Since this is water, we also should fine tune Reflectivity. Try the following: Luminosity 80%, Diffuse Level 40%, and Reflectivity 90%. (Leave all other parameters at 0%).

Finally, click on the [T] next to "Bump Map," set "Texture Type" to "Fractal Bumps," and click on [Texture Size]. Use X: 4 m, Y: 20 cm, and Z: 20 cm, and select [Use Texture] and [Close Panel]. This will add a widthwise ripple to the reflections.

10. Open the [Objects] panel and load the object called, "FlyingSaucer.lwo." Move the saucer to X: 2.25m, Y: -48 m, and Z: -90 m, and keyframe it.

[F9] shows us the scene so far (Fig. 5).

As you can see, the saucer is being reflected in the water (ripples and all); but the lighting and shadow are off.

11. To fix this, click on [Lights] from the Edit menu, and [Move] the light to X: 15m, Y: 32m, and Z: 178m. [Rotate] the light to H: 178 degrees, P: 24, and Z: 0.

Click [Enter] twice to keyframe it, and open the [Lights] panel.

For a more realistic look, set the light's parameters to: Ambient Intensity 10%,

Light Intensity 160%, Light Type: Spotlight, Spotlight Cone Angle: 60 degrees,

Spot Soft Edge Angle: 60 degrees, and Shadow Type: Ray Trace. Leave the rest of the settings as they are, and [Close] the panel.

A preview [F9] shows us the results of our adjustments (Figure 6).

You can continue to make this scene an even better composite by adding subtle fill lights, and adjusting object surfaces. However we need to move on to an explanation of a more sophisticated method of compositing in LightWave.

Multiple Pass Compositing

1. First, save the scene that you created, and then select [File] [Clear Scene].

Next, go back to [Options] [Layout View], and set "Layout Background" to [BG Image] again.

Open the [Images] panel, and load "Table.jpg." Then go to the [Effects] panel, select the [Compositing] tab, and set "Table.jpg" as the background image.

Now, set the Layout view to Camera; select [Camera] from the Edit menu, and [Move] from the Mouse menu. Position the Camera at X: 0m, Y: 0m, and Z: 0m. Hit [Enter] twice to keyframe it. This will fix the Camera in place while we load in the various objects.

Pressing [F9] shows us that all we have so far is the background image by itself (Figure 7).

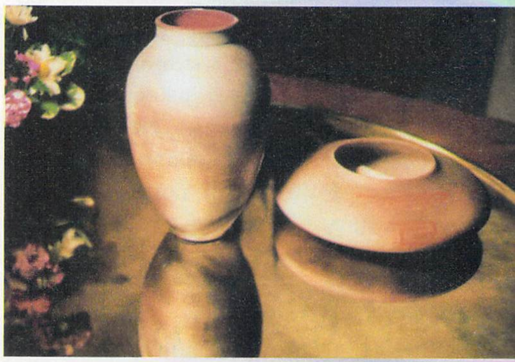

Figure 7

2. The next step is to load in the stand-in objects, which will allow us to cast reflections onto the table's mirror surface - as well as cast shadows onto the pottery.

Select [Load Object] again, and double-click on "Table.lwo." Click on [Move], [Numeric], and place the object at: X: -5.175cm, Y: -4.65cm, and Z: 28.5 cm. [Rotate] it to: H: -0.90 degrees, P: -33.70, and B: 0.00. Keyframe "Table.lwo" at frame 0.

Next, add the second stand-in object, "Pottery.lwo." [Move] it to X: 5.73cm, Y: -7.5mm, and Z: 32cm. [Rotate] it to H: 0.90 degrees, P: -33.70, and Z: 0.00, and keyframe it at frame 0.

Finally, load the object called "FlyingSaucer-Small.lwo." This is a much smaller version of the saucer - one suitable for the reduced scale depicted by the image we're working with this time.

Position the saucer at X: -2.75mm, Y:

-2.25mm, Z: 26.925cm. [Rotate] it to H: 0.90 degrees, P: -33.70, and B: 0.00. Select [Create Key], make sure "Create Key at" is set to "0," and click [Ok].

Figure 8 shows us all of the objects in their proper places. The circular table object is placed on "top" of the mirror in the image. The pottery object is placed over the shorter piece of pottery. Lastly, the flying saucer is hovering a bit above the table.

3. One more thing, we need to match up the Layout light's angle to that of the light source in the image. If you took the photo specifically for compositing, then you should have kept a log of camera settings (lens, f-stop, distance and angle from the focal point) and a diagram of the lighting setup. If you don't have that information, then you need to study the photo to analyze where the light(s) were and their intensity.

To match this image, click on [Lights] in the Edit menu, and [Move] the light to X: -17.53cm, Y: 17.55cm, and Z: 20cm. [Rotate] the light to H: 63.30 degrees, P: 42, and B: 0.00. Keyframe it at frame 0.

Pressing [F9] (Figure 9) shows us the basic setup. The stand-in objects are still visible, but not for long. We'll soon be adjusting their surface parameters.

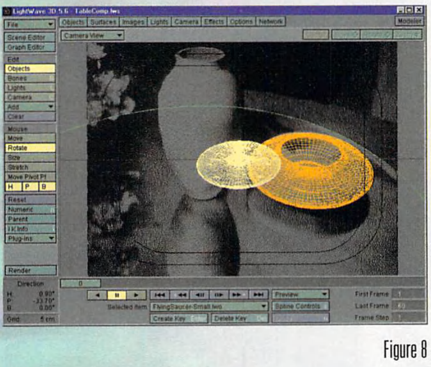
Figure 8

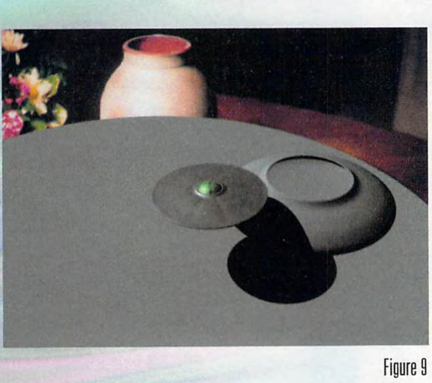
Figure 9

Now that we've placed the objects and light, we can hide the background image in Layout. (On slower computers, a visible background image can noticeably slow down the workflow.) For now, open the [Effects] [Compositing] panel, and set "Background Image" back to "(none)."

4. The render that we're setting up will be the foreground image for our final composite. It will contain the flying saucer, and the reflection of the saucer in the table object. The rest of the foreground image should appear black because when you set up a composite in LightWave, there's a Background Image, a Foreground Image, and a Foreground Alpha Image.

The Foreground Image is placed on "top" of the Background Image, while the Foreground Alpha Image determines how much of the Background Image will be added to the Foreground Image.

Areas of the Foreground Image that correspond to black areas of the Foreground Alpha Image will have 100% of the Background Image added to them.

Areas of the Foreground Image that correspond to white sections of the Foreground Alpha Image will not have any of the Background Image added. These sections will be "unaffected" by the background image.

In this case, the saucer is the main element of the Foreground Image, so we don't want the Background Image to add to it or "intrude" on it. However, we do want the rest of the Foreground Image to have the Background Image added to it, including the part of the Foreground Image that shows reflections of the flying saucer.

Finally, we can set up individual surfaces to cast shadows into the Alpha channel. This allows us to add the shadows last through the Foreground Alpha section.

Let's give it a shot. First, to improve the lighting situation, open the [Lights] panel, and lower the "Ambient Intensity" to 0.1. I would have set it to zero, but using a zero value caused a render error on my build of LightWave 5.6.

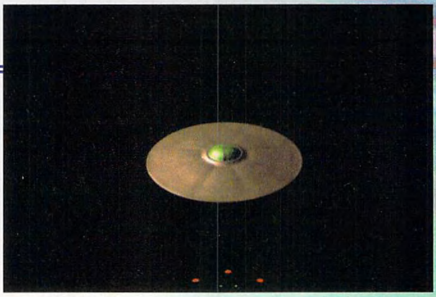
Figure 10

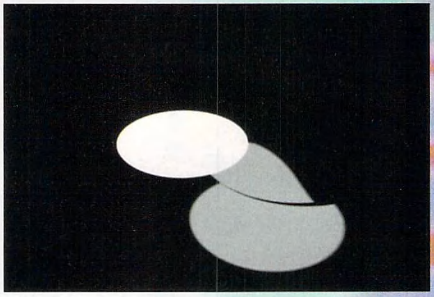
Figure 11

As well, set the light properties to:

Light Color: 227, 194, 168. (to approximate the image's tone)

Light Intensity: 130%

Light Type: Spotlight (for a more realistic effect).

Spotlight Cone Angle: 30%

Spotlight Soft Edge Angle: 30% (to soften the spot edges a bit).

Shadow Type: Shadow Map (to soften the shadow edges).

Shadow Map Size: 2048 (to reduce chunkiness of shadow edges).

Shadow Fuzziness: 4.0 (again, to soften the shadow edges).

Then, select [Clone Light], switch "Current Light" to "Light(2)," and drop this light's Intensity to 30%. As well, set "Shadow Type" to [Off]. This will slightly lighten the shadow - essentially "diluting" it.

5. Now to surface the stand-in objects, open the [Surfaces] panel, and change "Current Surface" to "Pottery." Since the alpha channel will supply all of the shadow information, we don't need to see this object. However, we do need to give it at least a tiny bit of diffusion, so it can receive shadows.

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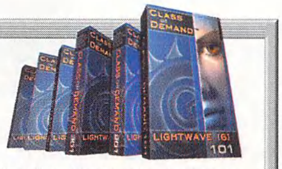

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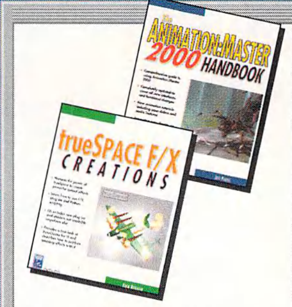

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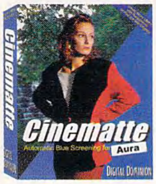

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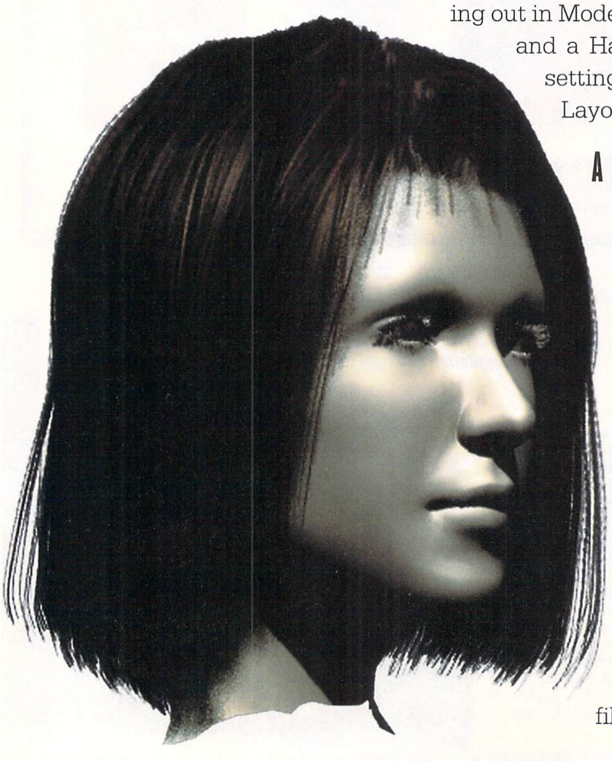
VIRTUAL ROGAINE

A Shave & A Haircut Tutorial

by
Richard Suchy

In the past, attempts to replicate hair have proved unsatisfying, if not totally futile. Finally, Joe Alter has developed *Shave and a Haircut* an elegant enough solution for production work with good looks and dynamics to match. I could go into the theory and features at length and bore you terribly. But, instead, let's put hair on our characters!

You will need LightWave and Shave and a Haircut for this tutorial. (If you haven't purchased Shave, you can download a demo version at www.joealter.com.) I will be starting out in Modeler, styling hair in the Shave and a Haircut executable, and then setting up a simple scene with Layout



A Head Made for Hair

You will need to create two models for this demo. They are identical except that they will have different surface names. The render model, surfaced with whatever surface names you like, will be the model we render hair onto in Layout. The hair model will be identical to the render model except that it will have specific surface names where hair will be applied. We will use this model to create a .hair file. The .hair file is used to define how hair should be placed and rendered on your render model.

If you don't have a model of a head, you could just create a ball in Modeler. The default settings will be fine. Name and [SAVE] the render model "head_rm.lwo." (When I say [SAVE] an object, users of LightWave [6] should, instead, [EXPORT] out the object as a LightWave 5.0 object. LightWave [6] includes input/output plug-ins for this purpose.)

The Shave executable doesn't currently recognize the model itself as a collision object. I've been told this is temporary. For now though, Shave recognizes a specific surface name, "skull." The polygons named skull are used to create logical spheres that the layout plug-in, shave.p, and the Shave executable will use to calculate collision.

Keep in mind that the size of the skull geometry can be misleading. The spheres are approximately 7% bigger than the geometry that they were calculated from. This is an aid to hiding the skull objects inside your render and hair models.

Now to place our skull geometry, create a sphere of 12 sides and 6 segments and move it inside the head. Size it accordingly, remember the resulting collision sphere will be about 7% bigger. If you are using a more head shaped head, create as many spheres

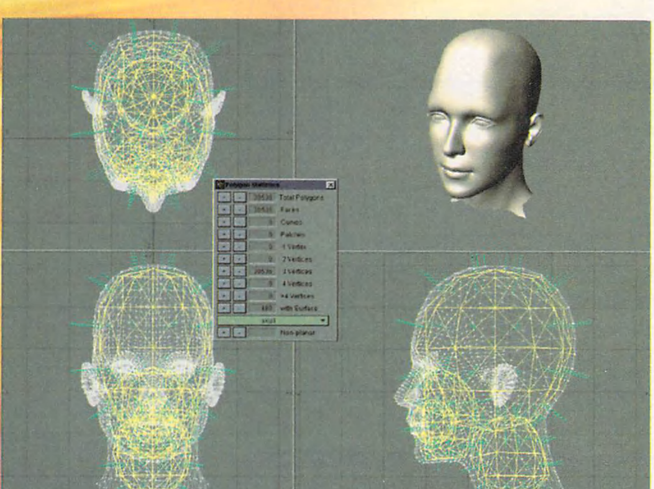


Figure 1

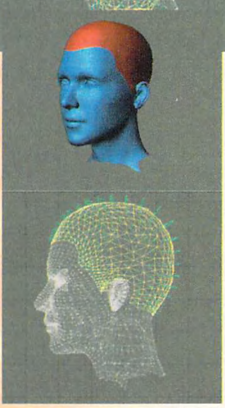


Figure 2

as you need to roughly define your collision zone. Name the surfaces "skull." (Figure 1)

Keep all the skull surfaces inside the model. You might even pull a point or two of the skull geometry if that will help keep them hidden. Shave uses shadow mapping to cast its shadows. Exposed skull geometry will cast unwanted shadows on your surfaces despite being 100% transparent.

Note: You could clip-map out the spheres provided you used Metamation or morphing to place the skull surfaces back inside the head after they are clip-mapped.

In a more complicated model, using bones and having shoulders, bones could deform the model and the skull surfaces at the same time. This enables the collision spheres to move with the body and for long hair to avoid passing through shoulders and neck after the model has been deformed.

Now that your skull objects are in position and the right size, [SAVE] head_rm.lwo.

We have collision surfaces for hair to collide with but no hair yet. We need to define surfaces to receive hair. We'll be using our render model to create our hair model. The Shave executable reads a model and produces three guide-hairs for each polygon that you name hair, beard, eyelash, or eyebrow.

Rename surfaces from which hair will grow. Rename all the other surfaces "default." They are not useful and clutter up the Shave interface if you have a lot of them. Shave.exe is case sensitive so remember to use all lower case letters for hair surface names. [SAVE] it out as "head_hm.lwo" - "hm" for hair model. (Figure 2)

Note: Only hair reacts to the collision spheres; beard and the others do not, though they can react to dynamics from wind, gravity or inertia.

Now We're Stylin'

The Shave executable is where we style the hair. It uses open GL. As mentioned before, Shave will generate a guide hair for each vertex using a reserved name: hair, beard, brows, and lashes. Guide hairs are representatives of many more hairs that you will not see until rendered. We will use these to define how our hair will be in its initial state before all the elements of dynamics move it about.

I cannot possibly cover all the aspects of the Shave executable in this limited space. If you have Internet access, I highly recommend reading the manual at this time (www.joealter.com/new.html).

At the top left corner of the interface, you should see rows of boxes. (Figure 3) Each row represents a different surface name. Surfaces named with the reserved names have three boxes while any others have only two. The left box sets the hair mode to active for that surface. The middle box sets the hair to inactive but visible and will change the hair color for that surface. Clicking on the rightmost box sets the hair to inactive and the surface to invisible. When a right box is selected, the display will auto-size to whatever hair is left visible.

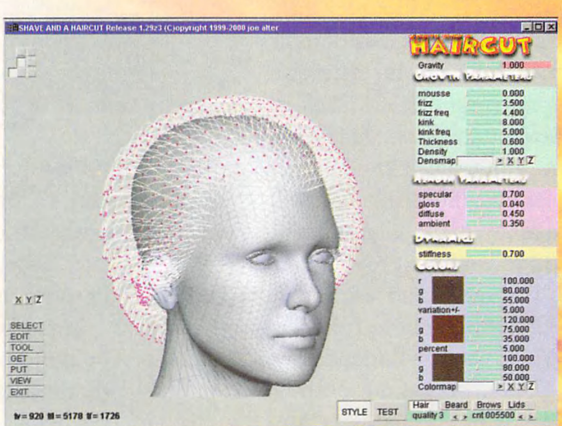
From the seven tabs on the bottom left, click [GET], choose [Model], and load hair_hm.lwo. Loading may take longer than you expect because the model is being examined and auto-groomed. When the model comes up, it will have spline hair generated for the reserved surface names. By default, the beard, lashes, and brows will be short while the hair surface will be long and swept back.

Hit the [i] key to deselect all the hair. By holding the left mouse button [LMB] in the upper half of the display window, you can rotate the object. By clicking the X, Y, or Z box on the left, you can snap the display to another angle. Pressing the [RMB] will activate whichever tool is currently selected.

Find the row of boxes (on the upper left) that control the states of the surfaces other than hair. Select the middle box of each. Now, only hair should be editable.

You can [Select] hairs in several ways (i.e. by strands or roots).

Click [SELECT] and choose Whole Strand. And from [TOOL], choose Stand on End. In the display window, press and hold the [RMB] and move the mouse from left to right across the display. The hair will begin to straighten



Gravity 1.000

mousse 0.000
frizz 3.500
frizz freq 4.400
kink 8.000
kink freq 5.000
Thickness 0.600
Density 1.000
Densmap > X Y Z

specular 0.700
gloss 0.040
diffuse 0.450
ambient 0.350

stiffness 0.700

r 100.000
g 80.000
b 55.000
variation+/- 5.000
r 120.000
g 75.000
b 35.000
percent 5.000
r 100.000
g 80.000
b 50.000
Colormap > X Y Z

quality 3 < > cnt 005500 < >

tv=920 tl=5178 tf=1726

Figure 3

out. Lift up the mouse and move it back to the left so you can continue to straighten the hair. This will make it easier for us to select hair, one row at a time. (Figure 4)

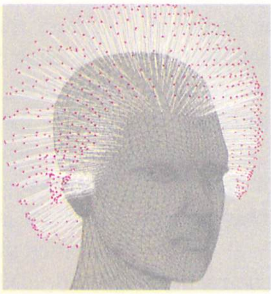


Figure 4

Now we select all the hair. In [SELECT], choose Hair Ends and then Hair Roots. Since fewer vertices are visible, it will be easier to see what we are selecting. Put the cursor in the center of the hair mass. Press [LMB], [RMB], and [SHIFT]. Pull the mouse to stretch out the selection circle to encompass the head and release the [RMB]. Then you can release the [LMB]. (It just seems to work better if you do it this way.)

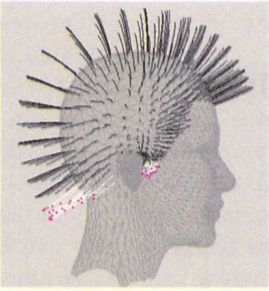


Figure 5

You now have all the hair selected. We want to de-select all the hair but the bottom row or two. We are still in Root Select mode, so press [LMB] and [RMB], but not [SHIFT]. Carefully de-select until you have only the bottom most hairs on the head selected. (Figure 5) Next we shape it.

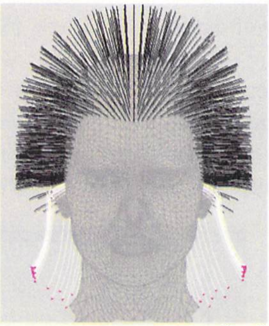


Figure 6

From the [TOOL] tab, select Translate. From [SELECT], choose Hair Ends. With the [RMB], pull the hair ends straight down. From [TOOL], select Scale. Move the [RMB] left or right to scale the hair to a length that you like. Since this hair will be invisible soon, remember landmarks by which to judge your next row of hair.

Choose Stand on End from [TOOL]. Be careful, a little bit goes a long way. When you are satisfied with the angle the hair comes out of the head for this row, wait until you are sure the display has finished updating and then choose Clump from [TOOL].

Clumping points together will pull them inwards towards the center of the selected group. Clumping negatively will push the points away. Use this to easily aim the hair ends where you want them to be. (Figure 6)

The tools work differently based on the selection mode you are in. You will find that good combinations exist to solve any problem.

Periodically click in the X, Y, or Z view boxes to get a good idea how the hairs are lining up. When you are satisfied with this row of hair hit the [–] key to hide your selected hairs. This way you won't accidentally mess them up.

Continue with each row of hair until you are finished; but remember, when you render, gravity will pull the hair down somewhat. Make the hair fuller and more arced than you want it. Also read up on hair terminology and cutting techniques to give you ideas. www.hairdos.com is a good resource for styles.

Color and Texture

On the right, sliders define how the hair is rendered. You can read about the specifics of the parameters in the online documentation. Below, I have added some guidelines for using the settings.

Mousse: Be careful, a value of one converges virtual hairs toward the guide hair until they meet at the end. It's usually better to steer clear of numbers approaching or larger than one.

FRIZZ: (or clumpiness in earlier versions) This setting tends to give hair more body but can also drive virtual hairs through collision spheres. It is a post dynamics rendering effect.

FRIZZ FREQ: (or clump freq) A higher frequency yields smaller clumps.

KINK: (or kinkyness) As with clumpiness, it is a post dynamics effect and can push some hairs through collision spheres.

KINK FREQ: (or kinkyness freq) Higher numbers yield more frequent kinks along a hair's length.

THICKNESS: Play with this setting. You can achieve different results depending on how many aliasing passes you render. I generally set it to its lowest possible parameter for human hair.

K SPEC: Similar to glossiness, it controls the tightness of your specular highlight, however lower values yield tighter highlights.

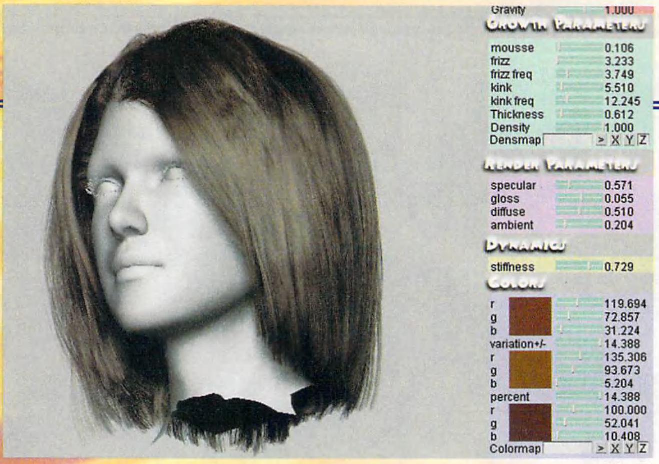
GLOSSINESS: Replaces K spec in later revisions. Higher Values yield tighter highlights.

AMBIENT: This one works a little more like luminosity. Use it sparingly. It may over-brighten or weaken the effect of self-shadowing of your hair in Layout.

STIFFNESS: How much the hair resists dynamic forces.

Under Colors, the first three sliders are for the hair color at the tip of the hair. The variation slider is for hair color. Higher numbers yield more variation in the color.

The next set of color sliders is for the color of the mutant hair. The percent sliders define how much of the hair is a



Gravity 1.000
mousse 0.106
frizz 3.233
frizz freq 3.749
kink 5.510
kink freq 12.245
Thickness 0.612
Density 1.000
Densmap
specular 0.571
gloss 0.055
diffuse 0.510
ambient 0.204
stiffness 0.729
r 119.694
g 72.857
b 31.224
variation+/- 14.388
r 135.306
g 93.673
b 5.204
percent 14.388
r 100.000
g 52.041
b 10.408
Colormap

Figure 7

mutant color.

The final three sliders define the color of the hair at the roots.

COLORMAP: Autosizes a planer map to the X, Y or Z planes. However this color information is multiplied into the color slider settings. Set the sliders to white in most cases.

Play with these settings. Testing them by choosing Draw Preview from [VIEW] will give you a decent indication of your final rendering.

Testing and Rendering Hair

Before you test, you should know the two ways to exit from TEST mode. If you click on [STYLE], the hair returns to its last untested state. If you hit the [ESC] key, your hair stays as it was in test mode when you hit [ESC], transferring any changes into the style mode. I suggest Saving your .hair file before testing dynamics, just in case you hit [ESC] by mistake. (To save, select Hair File from [PUT]. The [PUT] feature is not on the Demo version.)

Click [TEST]. Choose [VIEW] and drawpreview. Avoid placing other windows over the shave executeable while it is rendering a test. You may get undesirable distortions of the final output. [ESC] exits and allows you to continue. Save your .hair file.

While experimenting, use medium anti-aliasing for the best results. Low will work, and so will none; however, the results are less hair-like. Do not use adaptive sampling. And try to use only one memory segment for your render, though it is slower. (Figure 7)

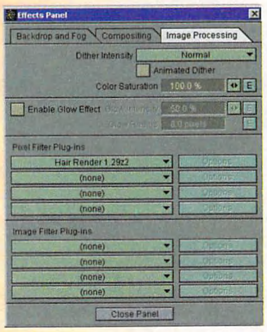
The object that you render hair onto should have the same point count and order as your hair object. If it does not, you will see what we, in the digital styling profession, call a "hair explosion." Load head_rm.lwo into your scene.

Adding hair should be the last thing you do when setting up a scene. Set up your movement for your character. A simple 360 degree spin should be good enough for testing. To see the effects of the hair when the head suddenly stops moving, have the spin complete about 15 frames before the end of the render.

Gravity will effect the hair from its initial position. To let the hair settle, give your scene a 10 frame lead, which you don't need to render.

Distant and cone lights work with this hair. (Area lights *might* work. I haven't had time to test them.) Shadow maps render much faster than ray traced lights.

If you name a light with an "x" as the first letter, it will not effect the lighting of the hair. If the light's name begins with "wind," it will control the hair dynamics. For example, if you turn off specular and diffuse on a cone light titled "wind-light," the intensity settings apply wind effects to the hair. Noise is automatically generated in the wind. A setting of 100% intensity gives the wind a strength similar to that of gravity.



Dither Intensity: Normal
☐ Animated Dither
Color Saturation: 100.0 %
☐ Enable Glow Effect

Pixel Filter Plug-ins
Hair Render 1.29z2
(none)
(none)
(none)

Image Filter Plug-ins
(none)
(none)
(none)
(none)

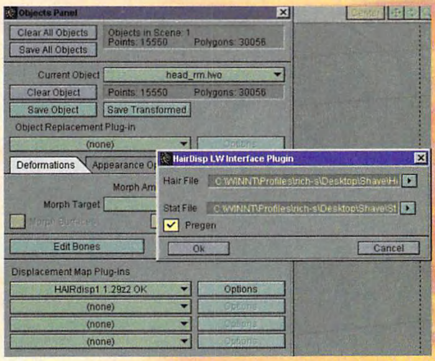
Figure 8

In the LightWave Layout Effects Panel under Image Processing, add "Hair Render" to your Pixel Filter Plug-ins column. (Figure 8)

In the objects Panel, make head_rm.lwo your current object. Add "HairDisp1" to your Displacement Map Plug-ins column. Click the [Options] button for HairDisp1. Enter the path to the .hair file beside Hair File.

Beside Stat File, enter a path and a prefix name for your stat files. One will be created for every frame of your animation and a number will be appended to the name you choose.

Click on Pregen. By selecting Pregen, we have elected to pre-generate our hair dynamics so that production facilities can use more than one machine at a time to render and machines can pick up lost frames at a later time without regenerating the entire dynamics of the scene. The dynamics information is saved in the stat files.



Objects in Scene: 1
Points: 15550 Polygons: 30056
Current Object: head_rm.lwo
Points: 15550 Polygons: 30056
Object Replacement Plug-in: (none)
Morph Target
Hair File: C:\WINNT\Profiles\rich-s\Desktop\Shave\H
Stat File: C:\WINNT\Profiles\rich-s\Desktop\Shave\St
☑ Pregen

Displacement Map Plug-ins
HAIRdisp1 1.29z2 OK
(none)
(none)
(none)

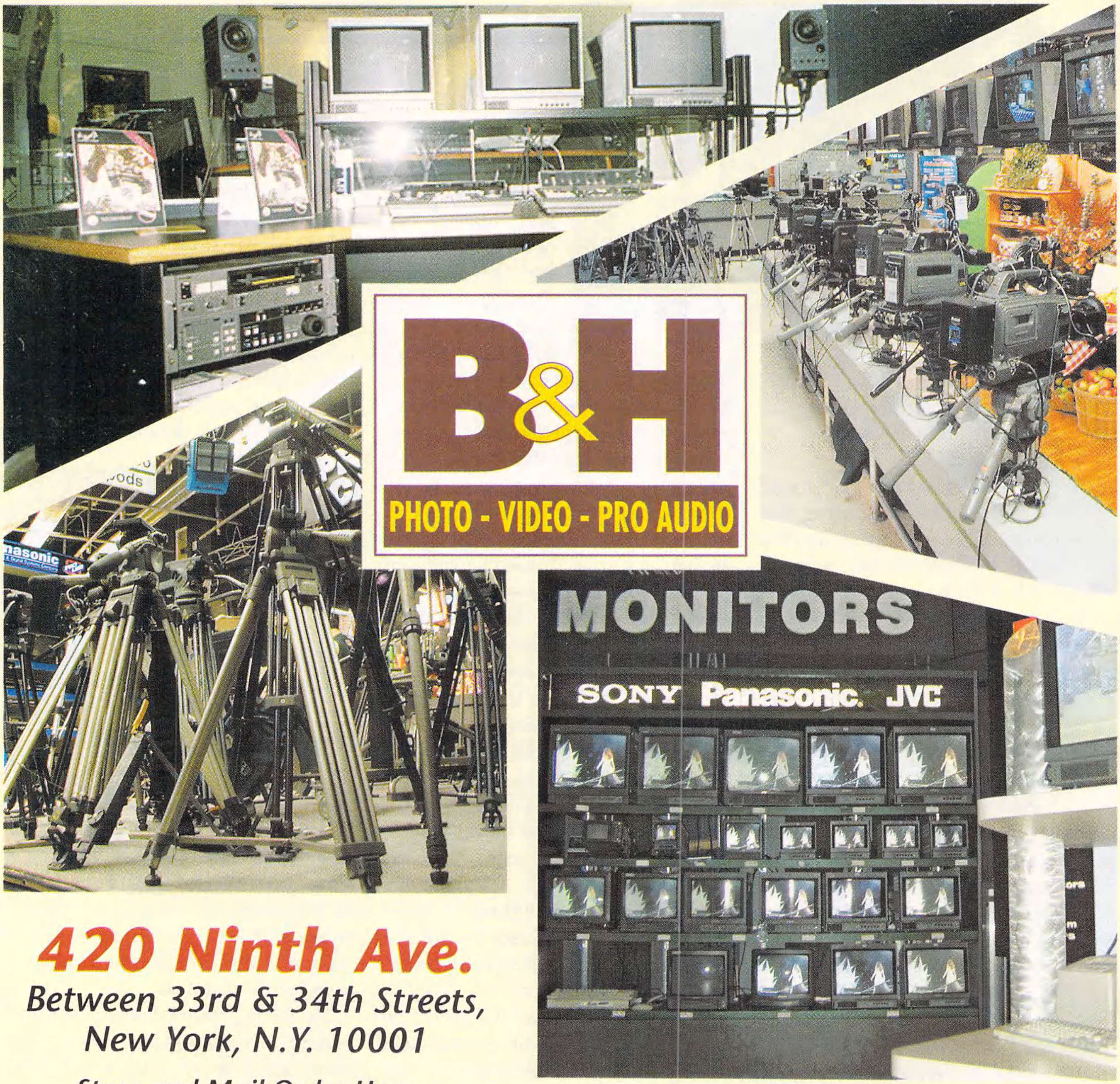
Figure 9

The file is generated while creating a wireframe preview of your scene. Be on frame zero, do not skip around, this may cause problems. Create your wireframe preview. Open up the Objects Panel again and choose [Options] for the HairDisp1 plug-in and uncheck the Pregen box. Save your scene.

You can now render any of the frames you want and in any order you wish. For still images you can always turn down motion blur to 0%; however, you should leave it on. (An animation of my character is posted at www.newtekniques.com.)

You've got hair!

Richard Suchy models characters at Foundation Imaging. His email is rich-s@foundation-i.com.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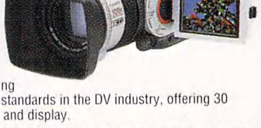
- Remote control with jog/shuttle dial

GL-1 The First Digital Video (DV) Camcorder with PRO L-Series Fluorite 20X Zoom Lens



Building on the company's design heritage in professional 35mm photographic and broadcast TV lenses, the GL1 is equipped with Canon's exclusive L-Series Fluorite 20X optical zoom lens and 3 CCD image sensors, offering outstanding imaging power in a lightweight, portable design. In addition the GL1 also incorporates the world's first 20X optical zoom. With the cameras ability to extend to a 100X digital zoom, users can increase magnification too distant to be seen with the eye alone. Encompassing the design characteristics of a consumer camcorder with its compact size and 2.5" flexible LCD view screen, color viewfinder, the GL1 is also equipped with much of the same functionality that attracts newscasters and independent filmmakers. By extending broadcast-quality DV technology to prosumers, Canon is bringing high-quality video production capabilities to homes and small businesses. For users interested in visual computing, this FireWire IEEE 1394 compatible camcorder is ideal for producing QuickTime movies and creating images for distribution via the Internet. FireWire is one of the fastest peripheral standards in the DV industry, offering 30 times more bandwidth than USB, allowing for high-speed desktop video editing and display.

- Professional L-Series Fluorite Lens - a material that provides outstanding resolution, contrast and color reproduction and minimizes color aberration, especially in high-magnification lenses.
- 20X Optical Zoom - At a 35mm focal length equivalent of 40 - 806mm, the 20X optical zoom transforms distant subjects into, dramatic close-ups.
- 100X Digital Zoom - capable of extending between 40X - 100X. At full telephoto, the 35mm focal equivalent is 80-600mm.
- Optional WD-58 Wide-converter - will increase by 0.7X, 28mm in 35mm focal equivalent, for indoor shots or panoramic views.
- Optical Image Stabilization - eliminates image shake due to a wide range of movement and/or high wind conditions.
- Three Shooting Modes -Frame Movie mode allows users to record high-speed action at 30 fps. - Normal Movie mode delivers more than 500 lines of resolution - Digital Photo mode, with self timer, captures more than 700 still frame images on a single 80-minute cassette in SP mode. For SLR-style flash photography, the digital photo mode will accommodate a selection of Canon's speedlight flashes, including the 220EX, 380EX or 550EX.
- Direction Accurate Microphone.
- Programmed AE - Offers seven advanced recording controls -Full Auto Green Zone -Auto Mode -Manual Mode -Spotlight -Sand & Snow -Shutter Priority/Aperture Priority
- Picture Adjustment Supports -Camera Sharpness adjusts picture sharpness before recording.

QUICK DIAL 74

SONY

DSR-PD100

3-CCD Mini DVCAM Camcorder

The smallest DVCAM camcorder, the DSR-PD100 is also the first one with built-in image capture capability. The highly compact camcorder features three 1/4" 380,000 pixel CCDs that allow two scanning modes: 480 progressive (for stills) or interlaced (for video).

- The CCD's can be switched to scan in two ways: Interlace Scan for recording moving images and Progressive Scan for recording still images
- Super SteadyShot compensates for unwanted camera movement without reducing image quality
- A built-in 12X zoom lens is supplemented by a 48X digital zoom that can provide really close up shots
- Manual control of focus, gain, white balance and shutter speed. Also has full automatic control
- Records PCM digital stereo sound in both 48 kHz mode(16-bit) and 32kHz mode (12-bit). When a recording has been made in 12-bit mode, another stereo channel can be added later
- The DSR-PD100 has a 3.5" color LCD monitor with 184,000 pixels, opening 90° to the side and swiveling 180°. Also has a 180,000 pixel color viewfinder.
- Can record still images on both tape or removable media, such as Memory Stick
- Supplied XLR adaptor attaches onto the hot shoe of the camcorder, allowing external professional microphones to be connected to provide high quality audio sources. Through XLR adaptor, DC power (+48V for a microphone is also supplied from the DSR-PD100
- A 0.7X wide conversion lens is supplied, complete with lens hood, lens cap and protective bag
- Incl. 4 MB Memory Stick & Memory Stick/PC Card Adaptor

DSR-PD150A

3-CCD Mini DVCAM Camcorder

High quality acquisition in the DVCAM component digital format, as well as in DV, allowing up to forty minutes recording on one tape Mini DVCAM tape or over a full hour inthe DV mode. Suited for Event Videography and Video Journalist applications. This compact camcorder features three newly developed 1/3 inch 380K pixel CCDs.with increased resolution and sensitivity at reduced noise and vertical smear.

- Allows two scanning modes: 480 progressive (for still) or interlaced (for video).
- Complete Professional Audio functions with two built-in XLR inputs.
- Built-in electronic zoom lens features Autofocus and SuperSteadyShot with an MTF 12X high quality optical lens with manual Zoom, Focus and Iris control.
- Built-in slot for a flash memory card or Memory-Stick for still image storage. Up to 988 JPEG pictures can be stored in one 64 MB MemoryStick. The stored images can be mixed or keyed to the live image allowing logo insertion and/or mix effects.
- High resolution (500 lines) B&W viewfinder and a color swing out bright color LCD panel are included to make shooting a breeze.• Software package for logo generation and included USB port adapter are standard.

JVC GY-DV500

1/2-inch 3-CCD Professional DV Camcorder

The world's first DV camcorder designed from the ground up for professional ENG work, the GY-DV500 combines the convenience and cost-effectiveness of Mini DV with the performance and features you need. Incorporate three 1/2-inch 380,000 pixel IT CCDs for superior picture performance (equivalent to 750 lines of resolution) superb sensitivity of F11 at 2000 lux and minimum illumination of 0.75 lux (LoLux mode). Rugged construction with a rigid diecast magnesium housing, Extremely portable, compact and light weight (lesss than 11 lbs. fully loaded). Additional features like the menu dial and Super Scene Finder assure ease-of-use and shooting flexibility, while the IEEE1394 and RS-232 interface allow integration into various non-linear and post-production systems. A professional camcorder in every sense, the compact, lightweight GY-DV500 redefines acquisition for corporate, educational, cable and broadcast production, as well as wedding videography and multimedia applications.

Professional Specifications
- Applies JVC's DSP with advanced 14-bit video processing to bring out more natural details, eliminate spot noise, accurately reproduce dark areas, and restore color information in dark areas.
- CCDs are equipped with advanced circuitry to virtually eliminate vertical smear when shooting bright lights in a dark room. Ensures efficient light conversion with a sensitivity of F11 at 2000 lux.
- CCD Defect Correction function evaluates white defects with the lens closed and then stores their addresses in memory. When the camera is turned on, the data is sent to the DSP for storage and real-time correction.
- Black Stretch/Compress function ensures accurate reproduction of black areas on the screen. Advanced color matrix circuits give even difficult images a very natural appearance.
- Multi-stream parallel digital pipeline processing at 40 MHz creates an ultra-smooth gamma curve, calculated using a true log scale algorithm. The result is a dynamic range of 600% to accurately reproduce fine details and colors in shadows or highlights.

Professional Performance
- Multi-zone iris weighting system gives priority to objects at the central and lower portions of the picture for accurate auto exposure under any condition, even if a bright subject moves into the picture.
- Adjustable gamma for adjusting the "feel" of the picture according to taste. Adjustable detail frequency for setting picture sharpness for a bolder or finer look.
- Viewfinder status display uses characters and menus to diplay selected information, including audio indicator, tape and battery remaining time, VCR operation and warning indicators. Camera settings and setup parameters can also be checked at a glance. A built-in menu dial lets you quickly navigate through the viewfinder menu.
- Highlight Chroma Processing maintains color saturation in highlights. The result is natural color reproduction, even in bright highlight portions of the picture.
- Smooth Transition mode ensures a smooth transition with no jump in color or light level taking place when manually changing gain or white balance settings

Professional Audio
- To complement its superior video performance, the GY-DV500 offers outstanding digital PCM sound. You can choose between two 16-bit 48-kHz channels or two 12-bit 32-kHz channels with a dynamic range of 85 dB.
- In addition to camera mounted mic, has two XLR-balanced audio inputs with 48v phantom power and manual audio control.Phantom power can be switched off when not in use.
- Side-mounted speaker lets you monitor audio in playback and recording modes without headphones. The speaker also delivers audible warnings.

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SONY

DSR-200A

3-CCD Digital (DVCAM) Camcorder

Combining a compact and lightweight body with the superior picture quality of DSP (Digital Signal Processing) and the DVCAM format, the DSR-200A is the ideal acquisition tool for video journalists, event and wedding videographers, stringers and production houses. 500 lines of horizontal resolution, 48kHz or 32kHz digital audio, three hour record time, and minimum illumination of 3 lux is only the beginning. Other features include 16:9/4:3 capability, Steady Shot, time code operation, time/date superimposition and an IEEE-1394 interface for direct digital output.

- **Variable servo 10X optical power zoom lens** goes from 5.9 to 59mm in 1.7 to 24 seconds. The manual zoom rocker is continuously variable right up to where the digital 20X zoom kicks in.
- **Sony's Super Steady Shot** reduces high frequency camera shake without compromising image quality. SteadyShot uses horizontal and vertical motion sensors that allow it to work accurately while zooming, moving (even shooting from a car), and shooting in low light conditions.
- Has **digital effects** including audio and video fade, overlap and Slow Shutter.
- **Automatic and manual focus**, iris, shutter, gain and white balance. Iris is adjustable in 12 levels from F1.6 to F11, shutter from 1/4 to 1/10,000 of a second in 12 steps, Gain from -3dB to +18dB in 8 steps.• **Zebra Pattern indicator**, bult-in ND filter.
- **Custom Preset function** lets you preset, store and recall custom settings for color intensity, white balance (bluish or reddish), sharpness and brightness.
- Stores Photo, Date/Time, Shutter Speed, Iris, Gain and F-stop for easy recall. So if you have to re-shoot, you know your original settings for every scene and frame.
- **Records Drop/Non-Drop Frame time code.** Time code can be read either as RC time code or as SMPTE time code
- Has a **large 1-inch B&W viewfinder** with 550 lines of resolution for easy focusing even in low contrast lighting situations. Separate information sub panel displays time code, battery time, tape remaining and other camcorder functions without cluttering up the viewfinder.
- Records **16-bit/48kHz audio on one stereo track** or 12-bit/32kHz with two pairs of stereo tracks (L1/R 1, L2/R2), so you can add stereo music or narration.
- **Automatic & manual** (20-step) **audio level record controls.** Monitor audio with headphones or from the LCD panel which has an active VU meter.
- **XLR input connectors** for mics and audio equipment.

DSR-300A

3-CCD Digital (DVCAM) Camcorder

Inheriting many of the same features and functions as the DSR-130, the affordable DSR-300A actually extends operational convenience with a range of new features and peripheral products. Remarkably compact and lightweight, the improved DSR-300A provides high mobility without compromising picture quality and can be held comfortably on your shoulder through the longest shoots and gives videographers the ability to acquire their footage quickly and easily.

- The DSR-300A has three 1/2" IT Power HAD CCDs to deliver 800 lines of horizontal resolution, 62dB S/N ratio and high sensitivity of F/11 at 2000 lux.
- Power HAD CCDs also gives you a low smear level of -110 dB (DSR-300) allowing more freedom to shoot highlighted subjects
- With built-in 26-pin VCR interface, they can feed composite or S-Video output signals to an external recorder for parallel or back-up recordings. VCR recording modes including Parallel, Internal (only) and External (only) are selected via the trigger switch positioned on the operational panel
- With the DSR-300A, a picture previously recorded on tape can be superimposed on the viewfinder screen (Freeze Mix Function), allowing you to easily frame or reposition the subject just as in the previous shot. Combined with the SetupLog function, the retake shot becomes a breeze
- LSI Digital Signal Processor (the very same one used by the DXC-D30 cameras) for a high signal-to-noise ratio of 62 dB.
- Both mini cassettes (PDVM series) and standard cassettes (PDV series) can be used with the DSR-300A. With PDV-184ME (standard), a maximum recording time of 184 minutes can be acheived. They can also play back tapes recorded in the consumer DV format
- For operational convenience while shooting, the Time Code is superimposed on the viewfinder screen or MONITOR OUT screen, even during playback
- DXF-801 viewfinder featuring variable peaking, 3 level tally light and a white LED light with 2 levels of intensity to illuminate the lens setting • IEEE1394 i.Link (out only)
- Color Temperature Shift allowing the operator to manually shift the white balance either towards blue or red to compensate for conflictive (color temp mix) and because of the wide range it also provides creative artistic painting.

DSR-20/40 DVCAM Player/Recorders

The DSR-20 and DSR-40 are versatile DVCAM VCRs with compact chassis' and a variety of convenient functions for recording, playback and simple editing. They feature Auto Repeat Playback, Power-On Recording/Playback, multiple machine control interfaces and i.Link (IEEE1394) input and output. And, of course, they offer the stunning image and sound quality inherent to the DVCAM format.

- **i.LINK** They both offer i.LINK ((IEEE1394) input/output. In addition, in the "Digital dubbing including TC Copy" mode, full information of video, audio and time code of the original tape can be copied to another tape. Especially useful when making working copies of the original.
- **Inputs and Outputs**They provide a full range of analog video inputs and outputs for integration into current analog-based systems. They both offer composite and S-Video input/output, while the DSR-40 (only) offers a component output as well. The DSR-20 is equipped with analog audio inputs and outputs (RCA), the DSR-40 with RCA inputs and XLR-balanced output. These connections in combination with their i.LINK interface allow a smooth transition to an all digital system in the future.
- **Record/Playback Functions** Automatic repeat function for repeated playback. After reaching the end of the tapet, the DSR-20/40 automatically rewinds the tape, then starts playing back the segment again.
- They are capable of searching for Index Points, which are recorded on the tape as "in-point" marks every time a recording starts. They can also search for photo data recorded on a DVCAM cassette by the DSR-200A/300/PD-100, or where the recording date has been changed.
- **Reference Input** External sync input enables synchronized playback with other VCRs. Especially important in A/B Roll configurations. In addition, the DSR-40 only allows adjustment of H-sync and SC phase via the menu.
- **Control S Interface** The DSR-20/DSR-40 have a Control S input allowing control via the optional DSRM-20 Remote Control.
- The DSR-20 adds a **Control S output** connector allowing two or more (up to 50) DSR-20s to be daisy-chained and controlled from one DSRM-20.

DSR-20 Only • The DSR-20 can be powered by AC or DC.
- Equipped with Control L interface, the DSR-20 can perform simple Time Code-based editing when connected to another DSR-20 or other similarly equipped VCRs/cameras.
- In addition to Control L, the DSR-20 also incorporates an RS-232 interface for remote control of basic VCR functions from a PC.
- Supplied with the RMT-DS20 Wireless Remote for control of basic VCR functions.

DSR-40 Only • Equipped with an RS-422A interface, it can perform as the editing player in A/B roll or cut editing system.
- It also has a simple recording function which can be controlled either manually or via its RS-422A interface.
- The DSR-40 is not equipped with a synchronization capability, the editing accuracy is performed by pre-roll and play.

DSR-30 DVCAM Digital VCR

The DSR-30 is an industrial grade DVCAM VCR that can be used for recording, playback and editing. DV standard 4:1:1 sampling digital component recording with a 5:1 compression ratio provides spectacular picture quality and multi-generation performance. It has a Control L interface for editing with other Control L based recorders such as the DSR-200A DVCAM Camcorder or another DSR-30 . It also has a continuous auto repeat playback function making it ideal for kiosks and other point of information displays.

- Records PCM digital audio at either 48kHz (16-bit 2 channel) or at 32kHz (12-bit 4 channel) .
- Equipped with Control L. capable of SMPTE Time Code based accurate editing even without an edit controller. Built in editing functions include assemble and separate video and audio insert .
- By searching for either an Index point or Photo Data recorded by the DSR-200A camcorder, the DSR-30 drastically cuts the time usually required for editing. The DSR-30 can record up to 135 Index points on the Cassette Memory thanks to its 16K bits capability.
- Audio lock ensures audio is fully synchronized with the video for absolute precision when doing an insert edit.
- Built-in control tray has a jog/shuttle dial, VCR and edit function buttons. The jog/shuttle dial allows picture search at ±1/5 to 15X normal speed and controls not only the DSR-30 but also a player hooked up through its LANC interface
- DV In/Out (IEEE 1394) for digital dubbing of video, audio and data ID with no loss in quality.
- Analog audio and video input/outputs make it fully compatible with non-digital equipment. Playback compatibility with consumer DV tapes allows you to work with footage recorded on consumer-grade equipment. Tapes recorded in the DSR-30 are also compatible with Sony's high-end DVCAM VCR's.

QUICK DIAL 731

PINNACLE SYSTEMS

DV500

$879^{95}

DV500
DV500
REAL-TIME NATIVE DV EDITING WITH 3-D EFFECTS
PINNACLE

Realtime DV Editing with 3D Effects

The DV500 is simply the most affordable real-time, native DV non-linear editing solution for video producers and videographers—ever. A complete dual-stream, digital video production system based on DV (IEEE 1394) the DV500 plays effects, titles and filters instantly with no rendering. Internally the DV500 uses a dual stream hardware DV codec , providing real time special effects and transitions again with no rendering. The DV codec (uses the same encoding technology that exists inside your DV camcorder so there is no damaging transcoding or recompression) maintains a 100% digital communication between digital video equipment and the DV500, as well as providing extremely high quality encoding for analog video. The DV500 also provides simultaneous digital and analog video with audio I/O and includes support for MPEG-2 output for DVD, interactive MPEG-2 CDs, and web video streaming applications. In fact, the powerful authoring software bundled with DV-500 gives you the choice of delivery solutions – videotape, interactive CD-ROM, DVD and the Internet.

- Audio/video breakout box.
- Adobe **Premiere RT** realtime editing software,
- Pinnacle's **TitleDeko** a TV quality Character Generator software with hundreds of customizable styles
- Pinnacle's **FreeFX** a Plug in for Adobe premiere providing an elaborate xelection of complex broadcast quality 3D transitions
- Sonic Foundry's **Acid** Music allowing you to create custom music tracks for your production,
- Pixélan **SpiceRack** a collection of 300 unique images to spice up your production
- Minerva Systems' **Impression** authoring software allowing you to create a DVD or CD-ROM
- RealNetworks **RealProducer** to post your video on the web
- Adobe **PhotoShop LE**

matrox RT-2000

Real-Time Non-Linear Editing

Matrox RT2000 is a realtime nonlinear editing solution for corporate and event video artists, that provides an impressive array of professional features at an unprecedented price. The revolutionary Matrox Flex 3D™ architecture of RT2000 exploits the explosive 3D graphics performance of the award-winning Matrox Millennium G400 accelerator to provide broadcast-quality 3D DVE and 32-bit uncompressed animated graphics in a native DV editing environment. MPEG-2 output for DVD, Video CD, and web video streaming applications, along with 1394 and analog video output for tape distribution, rounds out the solution.

Real-Time Non-Linear Editing

- Matrox RT2000 lets you work with two video streams and a 32-bit, uncompressed, animated graphics layer in real time. Choose from organic and 3D transitions, 2D and 3D DVE, and transparency effects – in real time
- Realtime editing power gives you the creative freedom to experiment. Theres no penalty for changing your mind. Everything happens instantly, at full online quality, and you see the results immediately on your PAL or NTSC monitor.
- Instant random access to any frame in your project gives you a very responsive realtime scrubbing interface. You can see what's happening at any point in your timeline, at full quality, whenever you want – without waiting for a preview to render

MPEG 2 Editing

- If you are acquiring video from an analog source, you can chose to edit in DV or in MPEG-2 4:2:2 I-Frame. Matrox RT2000 lets you capture and edit video in the MPEG-2 I-Frame format at variable bit rates between 10 and 25 Mbps. Whereas DV is fixed at 25 Mbps, MPEG-2 lets you digitize video at lower bit rates so you can make the trade-off between storage space and video quality when working on long form projects. You can offline at the lower bit rates and then autoconform at higher quality MPEG-2 or DV.
- MPEG 2 I-Frame is a better format for editing than MPEG-2 IB or IP that you may have heard about because it gives you instant access to every frame in realtime for frame-accurate edits, fast cuts and seeks, and a responsive scrubbing interface

Broadcast-Quality 3D Effects

- Matrox RT2000 harnesses the power of the Matrox Millennium G400 graphics accelerator via the revolutionary new Matrox Flex 3D architecture to deliver realtime, broadcast-quality 2D/3D DVE and transitions
- You get over 500 realtime effects and transitions including page curls, perspectives, scaling, picture-in-picture, and organic wipes with customizable drop shadows, soft edges, and color borders

Versatile Analog and Digital Input/Output

- Matrox RT2000 supports all the input/output connections you'll need to get the most from your editing system Capture from analog or DV tape. Edit once, then output anywhere. Deliver on tape, Video CD, DVD, or the Internet.
- Y/C and composite video input/output provides capture from analog cameras and output to tape
- On-board 1394 input/output interface performs digital transfers t and from DV tape. Device control and batch capture support are included
- 48 kHz stereo audio input/output genlocked to video ensures perfect lip-sync
- MPEG-2 MP@ML output supports distribution applications such DVD and Video CD authoring
- MPEG-1 & RealVideo output is used for web video streaming

Advanced Productivity Tools

- Matrox RT2000 includes a variety of unique productivity tools to save you countless hours in the editing suite

—Matrox Infinite Capture™ overcomes the 2 GB file size limit of Windows 98 by providing seamless capture and playback of unlimited file size within Premiere

—Accelerated print-to-disk quickly puts your realtime sequences into a DV or MPEG-2 file for storage, archiving, DVD authoring, etc.

—Accelerated image transfer of video frames to system memory over AGP increases performance of host-based software effects

—Versatile software codec lets you run multiple VFW applications concurrently so that you can render a project in a compositing or nimation application such as After Effects or 3D Studio MAX, while doing realtime editing on Matrox RT2000

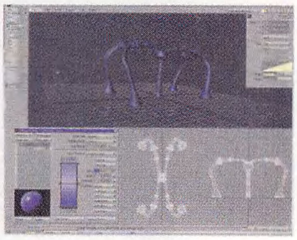
—IEEE1394 interface software provides camera/VTR control to facilitate frame-accurate clip logging, batch capture, and print-to-tape

—Realtime audio and video preview during DV capture lets you hear and see your material exactly as it is recorded onto your hard disk

NewTek LightWave [6]

3D Animation, Modeling and Rendering Software

Explosive ideas that test the boundaries of 3D animation deserve a program that can realize them in exciting new ways. Creating worlds that no one's ever seen. Creatures that have never walked the Earth. Special effects, games, web sites - all creations that exist only in your mind. Until now............



The culmination of over ten years of development, LightWave [6] advances the state-of-the-art in professional 3D animation by adding a comprehensive set of groundbreaking character animation tools, advanced rendering capabilities, a new and improved architecture and a refined work environment. The three traditional areas of 3D, modeling, animating and rendering, have received massive enhancements in the new software. Among the thousands of changes in this completely redesigned system, LightWave [6] boasts real-time subdivision surfaces as a modeling and animation tool, radiosity, caustics, 160-bit floating-point rendering, a hybrid Inverse/Forward Kinematics engine and new character-animation technologies: LightWave, the recognized leader in the film and television industry, provides the most complete feature set of any 3D animation tool available—one of the reasons you can find LightWave 3D in more Hollywood animation suites than any other 3D program. And , LightWave [6] is the only 3D software system to run on Macintosh, Windows NT, Alpha and SGI.

Video Toaster

Tools for Broadcasting and Beyond

With a suite of tools for video creation including all the essential components for video editing, compositing and 2D/3D animation, the Video Toaster is an uncompressed D1 (composite, component, Y/C) Windows NT solution that offers a price/performance equation unmatched in the industry. Unique to the Video Toaster is a breakthrough technology developed by NewTek that turns a standard Pentium II or III processor into a highly specialized video DSP (digital signal processor) for time base correction and other capabilities typically associated with expensive custom chipsets. Superior to systems that cost tens of thousands of dollars the Video Toaster includes LightWave VT 3D animation software, Aura paint and compositing software and in-syncs Speed Razor 4.5 SE video editing software. Leveraging over 12 years of experience as an industry leader and pioneer in the desktop video, 3D, and 2D paint and animation markets, NewTek has created a product that contains award winning tools for creating better than broadcast quality television....at an unbeatable price!

Uncompressed Video— No Compromises

- The Video Toaster offers quality that's second to none. ALL video is ALWAYS stored in its native, uncompressed D1 video format. Unlike other boards that show compression artifacts, the Video Toaster maintains the original pristine quality no matter how many layers in your project.
- The Video Toaster allows you to manipulate uncompressed video in many ways, including traditional 2D compositing, rotoscoping, 3D animation and modeling and editing. By merging video into a 3D compositing and animation environment, editors will find a new paradigm for video effects and manipulation. The quality and capabilities of the Toaster are comparable or better than digital video editing costing $50,000 to $100,000.
- The Toaster provides an uncompressed D1 (composite, component, Y/C) digital video solution typically associated with extremely expensive systems. High-end facilities know that uncompressed digital video is essential to the editing process. Most compression-based systems are elegated to industrial and corporate video segments due to restrictions on the number of layers and quality degradation associated with multi-pass compression. All compressed systems produce unwanted artifacts. Because the Toaster utilizes uncompressed video, you can infinitely layer video without any concern about artifacts. This is the major separation between high-end and mid range systems. The Toaster brings that ultra high-end sophistication to users at levels at an unprecedented price point.

Powerful Editing

Video Toaster includes in-sync's powerful editing application, Speed Razor 4.5 SE.

- Project timeline that lets you easily create professional video projects containing unlimited layers of video, audio, still image files and animation.
- Comprehensive 2D compositing system
- The ability to capture, edit and output to uncompressed video and other formats, including ASF for video streaming on the Web and multimedia AVIs.
- Graphical workspace for digital media content management
- Real-time on-screen preview of edits
- Power character generator (CG).

Toaster Utilities

VT Director—Allows any program that supports cut and paste to display an image on a NTSC or PAL video monitor. Imagine working in Photoshop and being able to display your work on a video monitor with one keyboard shortcut.

ToasterVision—Allows you to preview both video input and output as well as animation on your RGB monitor at 720 x 480 resolution and full frame rate—60 fields per second.

ToasterScope—Keep your video legal as you work on it. The built-in waveform monitor and vectorscope lets you monitor your video input and output.

ToasterKey—Use ToasterKey in Aura to paint in realtime on your video monitor. You can also paint in realtime over live video. Bring frames into Aura from a live input with the frame grabber.

Continuously Upgradeable —Guaranteed Against Obsolesence

The Video Toaster was designed to last for years to come. Similar to the original Video Toaster for Amiga, which is still in production 10 years after its introduction, the Video Toaster utilizes a hardware system that leverages highly tuned software and the systems processor. The true power of the system comes from the proprietary software designed to create magic without the use of expensive video cards or bulky external hardware. By merging software and hardware, the Video Toaster can be upgraded and expanded well beyond current systems. NewTek will be adding modules for a real time 16-input switcher, DV I/O, storyboard editing, and ***real-time*** chroma keying and 3D DVE.

VIDEONICS Effetto Pronto

Digital Video Effects and Compositing System for Macintosh

Effetto Pronto is a powerful combination of compositing and effects software, and a dedicated PCI hardware accelerator card. With a keyframe-based timeline compositing interface, Effetto Pronto blends all of the elements you want in your project.: video, graphics, 3D animation and anti-aliased text from the CG module. It even includes an audio track so you can animate to the beat of the music.

- Effetto is resolution independent so you can mix and match a variety of formats and seamlessly bring them all together
- Advanced character generator offers unlimited text overlap, free-form text positioning, point and click typing, font and color palette thumbnails, drop shadows and glows and much more.
- Color correction, chroma and luma keying, 3D warps with perspective and 3D animatable lights.
- Provides true 3D perspectives for your work. Any object can be rotated or warped on its X, Y, or Z axis, and can be positioned anywhere in 3D space.
- Work with an unlimited number of tracks at any resolution

QUICK DIAL 732

ICE.

ICE Final Effects Complete

Final Effects Complete is a premium set of 60 motion graphics effects' plug-ins for Adobe After Effects which create professional special effects for film, video and other digital video production. Final Effects Complete offers the ability to generate rain, snow, fire, smoke, bubbles, liquid mercury distortions, explosions, 3D particles, liquid displacement and lighting effects, a multitude of stylistic transitions and other video effects.

- 60 Hollywood-style filters and transitions– the same ones used in MTV and Fox promos.
- Full-featured 2-D and 3-D particle system. Create rain, smoke, fire, bubbles, ball action, confetti, jet trails, water ripples, cubes, star bursts, hair, liquid mercury blobs, fireworks and more.
- Particle World, an amazing 3D particle system with Z-depth and full camera tilt movement, lets you spray particle objects around your 2D image layers.
- Design unlimited effect combinations with interactive control over subtle compositing details. Effects can be animated over time to add even more sophistication.
- Incredible one-of-a-kind stylistic effects. Burn your image away like melting film. Paint in brush strokes with a glue gun. Scatterize every pixel of an image. Create psychedelic flowing backgrounds and kaleidoscope patterns. Flip your image like a page turning in a book to reveal another image. Materialize an image into glass or a blobby substance over time.
- Dramatic or subtle lighting with spotlights, multi-colored light rays, light sweeps and light bursts. Time controls for echo and motion blurring effects.
- Bend, slant, split, ripple, stretch, tile, twist and crumple your image or movie in an infinite number of ways. Turn them into a movable sphere or cylinder, rotate or manipulate them in any imaginable perspective without destructive clipping. The possibilities are endless.
- Remove tell-tale wires from blue screens. Create alpha maps and sepia tones, composite between effect and source, and even rotate between color values.

Final Effects
On Ice

BlueICE Family

Accelerated Effects Hardware and Software

ICE brings high performance capabilities to industry-strandard tools like Avid Xpress, After Effects, Commotion, Cinelook and ICE's own Final Effects Complete for After Effects. ICE's unique multi-processing hardware and software products enable design professionals to create top-quality content on the desktop faster and more cost-effective than ever.

With ICE, a render that used to take an hour now only takes a few minutes — and the quality is so good that it is impossible to tell that the effect was not created on a proprietary system costing ten times more. ICE also brings its powerful hardware to video compression and distribution solutions ike Sorenson Video and Terran Interactive for to speed delivery of content in a variety of digital media formats including video, film, DVDs, CD-ROM's and the web.

After Effects on ICE

Motion Graphics and Visual Performanced Card

After Effects 'On Ice' provides blink-of-the-eye interactive responsiveness and lightning fast rendering across the entire application, not just with plug-in special effects filters. It gives users greater freedom to experiment in any compositing task, to perfect the right look, to complete more projects, and most important, to gain a vital edge. Along with a palette of awesome ICE effects, a must-have tool for After Effects users, AE on ICE adds performance where it is needed most — the core AE functionality of Geometrics, Compositing, and Motion Blur. So no matter if you are creating simple composites or intensive special-effects projects.

Basic Edition includes Basic BlueICE board, After Effects Production Bundle, ICE'd After Effects Application and ICEfx — ICE's own award-winning tool set for After Effects.

ultra Edition adds Ultra BlueICE hardware for the most powerful graphics perfomance available on the desktop.

It also includes an assortment of popular plug-in applications for After Effects These include an ICE'd DigiEffects CineLook, ICE'd Final Effects Complete and ICE'd Edges.

Basic BlueICE/Ultra BlueICE

Hardware Accelerator Cards for ICE'd Effects

The BlueICE video processing hardware is the cornerstone for the ICE family of graphics-intensive visual effects and media compression tools. With four Phillips TriMedia 1300 processors, the Basic BlueICE card has a combined computer power that exceeds a workstation with multiple 400 MHz Pentium processors. When applications get "ICE'd" they take advantage of BlueICE's multi-processing hardware to achieve performance gains of 2x to 50x compared with un-ICE'd software. Visual effects are rendered faster and files are compressed faster.

- The Basic BlueICE board works in both Mac and Windows NT systems and includes an interface to support an optional BlueICE SDI video daughter card. Basic BlueICE is also field-upgradable to Ultra BlueICE with a simple snap-on duughter card
- With eight TriMedia processors, Ultra BlueICE hardware delivers up to twice the speed of Basic BlueICE for the ultimate in performance — creating stunning graphics and publishing digital video for broadcast, CD-ROM or web distribution

BlueICE SDI Video Daughter Card

A revolutionary option for uncompressed video capture and playback, BlueICE SDI Video daughter card attaches to either Basic or UltraBlue cards eliminating the need for extra PCI slots devoted to video cards. The BlueICE SDI Video card provides SMPTE 259M video capture direct to disk. It provides frame-accurate deck control and captures QuickTime compatible media

- Real-time capture of SMPTE 259M video from your tape deck, fully integrated within the After Effects environment
- Uncompressed video footage is stored directly to disk with no compromise in video quality
- QuickTime format for seamless integrattion with your After Effects projects
- Video monitor output for viewing during creative iterations. When you are satisfied with the results, yoou can layoff directly to tape — uncompressed and real-time — all from within the After Effects environment
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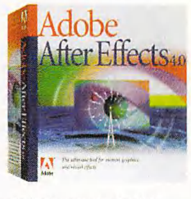
Adobe

After Effects

The Ultimate Tool for Motion Graphics and Visual Effects



The industry-standard for professional motion graphics, After Effects is the most powerful tool available for producing unlimited composites, fluid animations and sophisticated special effects. After Effects is also resolution independent (up to 4000 x 4000 pixels) so its the ideal design tool for film and video producers, graphic designers, multimedia professionals and Web developers. Produce stunning special effects for broadcast, film, video, multimedia, and on-line production right from your desktop. Create animations for openers, bumpers, on-air promos, commercials, music videos, titles, games, and more.

When compositing, After Effects produces results that meet even the most exacting standards. Control layers with stunning precision. Combine unlimited layers of moving and still images. Produce sophisticated audio and visual effects with more than 75 effects plug-ins. Create adjustment layers to apply effects to multiple layers simultaneously. Add any number of keyframes, animate and apply special effects to each layer, and adjust those layers until the composite looks and moves exactly the way you want. Enjoy precise control over every aspect of your composite-from sub-pixel positioning to controlling the shape and velocity of each animation path. Use the new RAM Preview function to check how compositions play back-in real time. Only when you are totally satisfied do you output a project for final delivery.

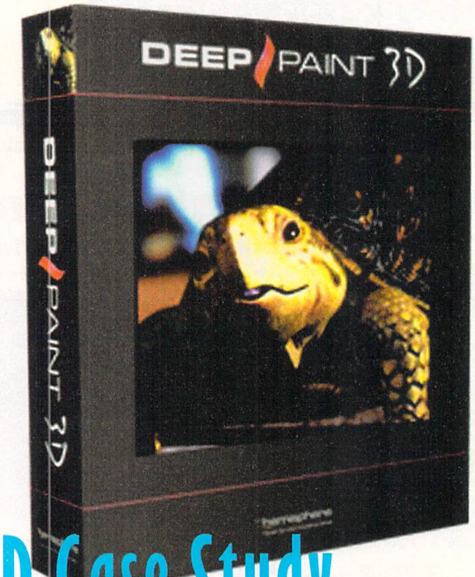
Available for Macintosh and Windows 98/NT, After Effects is tightly integrated with the Adobe product family, so if you work with Photoshop, Illustrator, and Premiere, you already have the skills, shortcut know-how, and hardware you need to make Adobe After Effects a seamless, powerful extension of your creative arsenal. When you import Photoshop files, After Effects preserves layers, alpha channels, and transfer modes-you can then animate each Photoshop layer over time. Imported Illustrator files remain in vector format until you output your final composition, so you can scale these graphics to any size while maintaining the crisp detail of the original artwork. After Effects and Premiere can import each other's movies.

Review

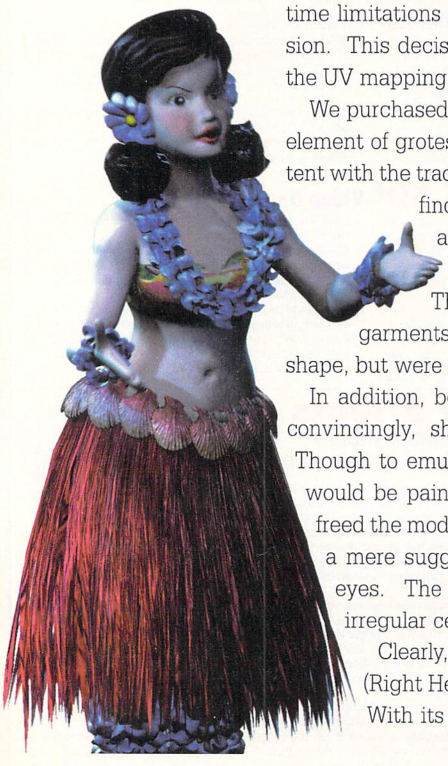
HULA GIRL

A Deep Paint 3D Case Study

By TJ Nabors



Recently, we at Will Vinton Studio were awarded a Bridgestone Tire commercial starring a CG character based on the classic dashboard hula girl. All other elements were live action film, which we altered to create a stylishly cyan, hyperreal aspect. To fit the context, our hula girl needed to be a fairly realistic toy. As usual, the project required multiple levels of approval from the ad agency and the client, and needed to be completed within a very short turn around time.



Though we were longing to use LightWave 6.0, executive decision declared that we do the work in 5.6 due to time limitations and our familiarity with the older version. This decision eliminated the possibility of using the UV mapping available in 6.0.

We purchased a variety of souvenir hula girls, but an element of grotesqueness in the toys seemed inconsistent with the traditions of salesmanship. The clients did find certain attributes of the dolls desirable: the crudely cast ceramic or plastic bodies and the skirts made of fibers. They also liked that the face, hair and garments were barely suggested in the cast shape, but were defined by cartoony painting.

In addition, because our hula girl needed to speak convincingly, she demanded a dimensional mouth. Though to emulate the toys, the other facial features would be painted. The reliance on painted textures freed the model builder to create a manikin face with a mere suggestion of nose and flat planes for the eyes. The doll's surface would resemble chalky, irregular ceramic with a bit of luster in the hair.

Clearly, this was a job for Deep Paint 3D, (Right Hemisphere's texture painting software). With its array of convincing tools, I could generate texture maps by painting directly on the model. I also could precisely place bump and specularity, useful for creating the illusion of a roughly cast object.

The capabilities of Deep Paint 3D (DP3D) are so broad that they cannot be adequately delineated in the short span of this article. The processes that I describe here make limited use of the vast functionality of the program, but they solved our problems neatly and gave me the ability to make quick alterations in the appearance of our little character for rapid client feedback.

Preparing the Model

The first step after the model was built (a one piece, arms-spread object), was to break her apart into areas of common surface to import into Deep Paint 3D. We essentially dissected the geometry into units, and decimated the polygons of these pieces. (These units are only stand-ins on which to paint our maps). We then saved these individual chunks of the model as elements "for-paint-only." The strategy was to paint the maps on these broken pieces in Deep Paint, and then to apply the saved maps to the original model, the surface names of which were the same as those of the poor dismembered hula girl.

To paint directly on the object in DP3D, first, blank texture maps were applied to the object in LightWave

Layout. A fairly large map is preferable; because if the resolution is too low, the final painting will look pixelized. For each of our body parts, cylindrical image maps worked best.

A certain amount of trial and error was necessary to get the image map to the perfect scale in relation to the model. At times, automatic sizing worked well, in other instances, the map needed to be larger than the model. The result of an inappropriately sized map is a kind of mirrored painting. A mark on the object may result in an equal and opposite mark mysteriously appearing on another spot. This Rorschach-like artifact can be very disconcerting. (I understand that this limitation is eliminated by Texture Weapons, the new add-on to Deep Paint 3D recently released by Right Hemisphere.) After deciding on a map size, I placed identical white cylindrical maps in the color, specularity and bump channels in LightWave and saved the object.

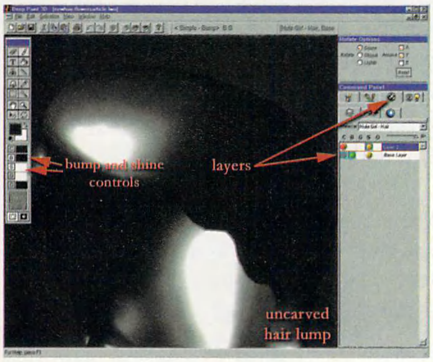


Figure 1 - Hair Uncarved,

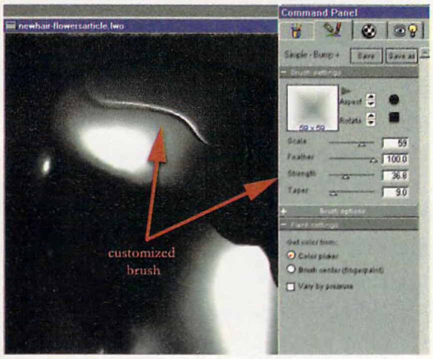


Figure 2 - Customized Brush,

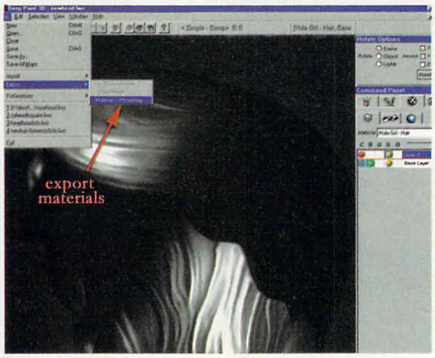


Figure 3 - Hair Carved,

It's a Wonderful World

I then opened Deep Paint 3D and Photoshop. Deep Paint installs a plug-in in the Photoshop Filters menu to enable the user to export Deep Paint maps into Photoshop as layered psds. Each layer is labeled with its intended use (bump, shine color, etc.). The topmost layer is an unwrapped wire frame of the model. This is exceedingly useful, in that all Photoshop's capability may be applied to the various layers, compounding the power of Deep Paint's comprehensive tool set. It's a wonderful world for the texture addict.

The next step was to load the object into Deep Paint 3D. For the sake of simplicity, I've chosen to open the "hair" object.

If the object and its LightWave-applied texture maps are not stored in the same directory, the program will ask the location of the image maps. If several surfaces on the object are mapped with the same image, the program will recommend that the user combine these into one material. For the purposes of painting the hula girl parts, this process has worked fairly well.

Our "hair" object opens in DP3D with one surface layer (a representation of this layer is visible in the "elements" panel – the icon of which is the ubiquitous checkered ball) containing indicators (solid color balls) that the model has arrived with color, specularity and bump maps applied. (Figure 1 - Hair Uncarved) I rarely adjust those original maps, but add another layer, Photoshop style, by double clicking on the blank space below the current layer. This step provides a new layer with empty channels. By clicking in the color, bump and shine channel boxes respectively, the artist is presented with options for defining the nature of those new channels: "nothing" which is an empty channel awaiting input by painting on the object, "image" which offers a browser for bringing in an image on that layer, and "color" which provides a color chooser.

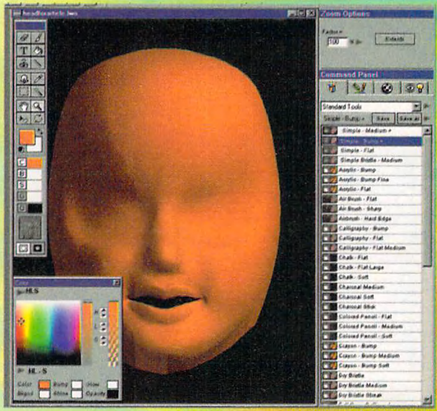


Figure 4 - Head,

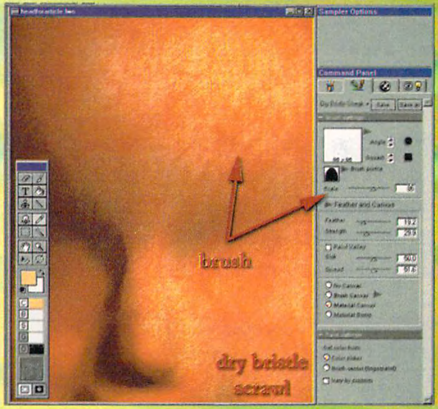
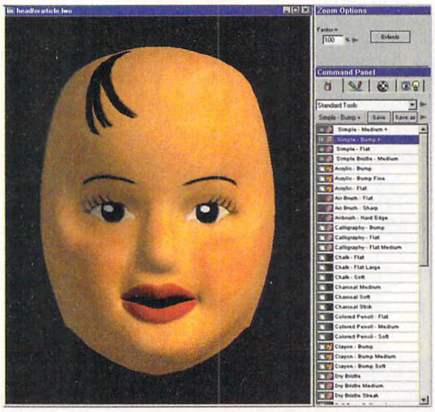


Figure 5 - Dry Bristle,

Painting the hair was one of the simplest and best uses I made of Deep Paint. It would have been possible, but hit-or-miss, to define the hair by painting bump maps on a flat plane, even with the information that unwrapped geometry would provide. In DP3D, I was able to load this very simple, lumpy object (it was generally held that, to be truly girly, our hula gal should have large hair), and actually carve the waves, curls and contours of the hair with the extremely flexible bump and specularity tools in the software.

I disabled the color channel by toggling it off, and refined a simple bump brush to produce a deep, soft edged gouging tool. (Figure 2 - Customized Brush) The intensity of bump and specularity is controlled by a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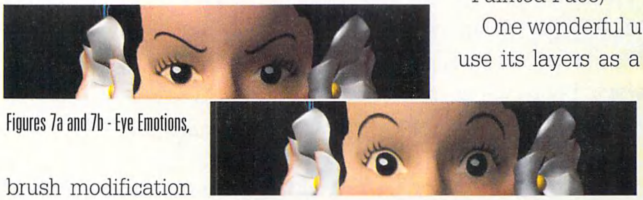
Command Panel
Standard Tools
Simple - Bump
Save
Save as
Simple - Medium
Simple - Bump
Simple - Flat
Simple Bristle - Medium
Acrylic - Bump
Acrylic - Bump Fine
Acrylic - Flat
Air Brush - Flat
Air Brush - Sharp
Airbrush - Hard Edge
Calligraphy - Bump
Calligraphy - Flat
Calligraphy - Flat Medium
Chalk - Flat
Chalk - Flat Large
Chalk - Soft
Charcoal Medium
Charcoal Soft
Charcoal Stick
Colored Pencil - Flat
Colored Pencil - Medium
Colored Pencil - Soft
Crayon - Bump
Crayon - Bump Medium
Crayon - Bump Soft
Dry Bristle
Dry Bristle Medium
Dry Bristle Streak

Figure 6 - Painted Face,

gray scale value system. Medium gray is neutral; black is negative bump or shine; and white is maximum positive bump or shine. I proscribed 0 black as the bump color and 255 white as the specular, then went to the brush modification menu, sized the brush, feathered the edges profoundly and proscribed a taper to the brush which allowed its influence to become smaller toward the end of the stroke. I then rotated the hair object while painting strokes, which softly sculpted the surface, hence giving a relatively convincing approximation of the contours in the hair of the toy hula girls. (Figure 3 - Hair Carved)



Figures 7a and 7b - Eye Emotions,

When I was ready to save these layers, I had a couple of options. One was "File Save" which saves all images, bump maps, shine maps, objects (as dp3 objects) and alphas into a single directory. Those maps can be loaded as images in LightWave and applied as surface maps. The more useful option in this instance was to "file, export material – Photoshop," which sends all layers into Photoshop into a complex .psd. By exporting to Photoshop, I was able to make modifications to each layer (blur the bump, grade the intensity of the strokes); easily see and discard the unnecessary layers; and save out the useful layers as individual files to be loaded as image maps in LightWave.

Face Painting

Painting the face of our hula girl provided a wonderful opportunity. After applying color, specularity and bump maps in Layout, the head was opened in DP3D. I created a new layer containing color, bump and shine. (Figure 4 - Head)

I first filled the face layer with a fleshy orange. I then added a layer above the orange one and used a peachy dry bristle brush tool to scrawl roughly over the surface of the face in order to build bump and add tooth to the surface. Specks of the underpainting were evident beneath the pencil markings. (Figure 5 - Dry Bristle)

I added yet more layers and painted on the eye elements, another for the mouth, and another for the rouged cheeks. (Figure 6 - Painted Face)

One wonderful use I made of DP3D was to use its layers as a 2D-animation tool. The eyes were to give the appearance of being painted on, but needed to express emotion. I was able to paint the animated eye sequence in layers over the existing eye layers (in a mock onion skin process) directly on the polygonal model. (Figures 7a and 7b - Eye Emotions)

Because the personality of the hula girl was defined by her painted surface, changes to her facial features and skin changed and evolved throughout production. On many occasions, Deep Paint saved us from the pit of hell. At one point, it was suggested from above that our sweet and primitive hula girl might sell more product if she were a sleek cyber hula chick. We minimized the chin and raised the cheekbones in the geometry, and then I was able to paint in the wicked, large eyed face in no time. It became immediately clear to everyone that our sultry cyber hula might be downright scary when she became upset during the course of the spot. (Figure 8 - Cyber Hula Chick Mesh)

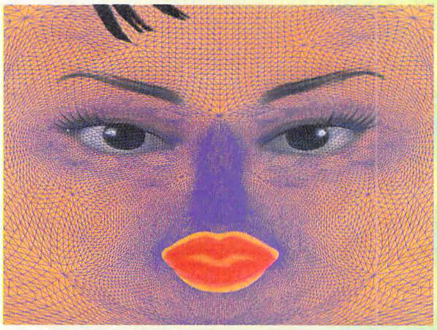


Figure 8 - Cyber Hula Chick Mesh,

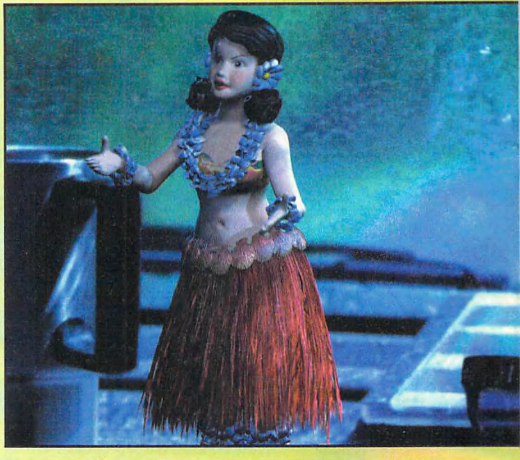


Figure 9 - Hula Girl

I was relieved to return to our cute and vapid character, and was barely flustered by the tangent, due to the speed and efficiency with which Deep Paint 3D had allowed us to experiment. In the end, our girl took on a pale, china doll appearance that responded well to the cyan lighting. (Figure 9 - Hula Girl)

Deep in My Heart

Will Vinton Studio was just awarded a substantial new LightWave project based on our ability to create a dimensional world with surfaces that seemed to be painted with oil pastels. The beautiful paint tools in Deep Paint 3D enabled us to present precisely the quality the clients were after. My enthusiasm for Deep Paint grows greater daily.

In addition, the responsive support personnel at Right Hemisphere say that their Texture Weapons add-on will introduce an entirely new mapping strategy. It will do the following:

Allow for painting across differently mapped surfaces easily with no stretching or obvious seams,

Directly support LightWave 6.0 UV mapping, and add a large set of new tools to the already impressive Deep Paint 3D.

I look forward to experimenting with Texture Weapons and to further developments from this New Zealand company, which clearly seeks to revolutionize the way we approach texture mapping. NT

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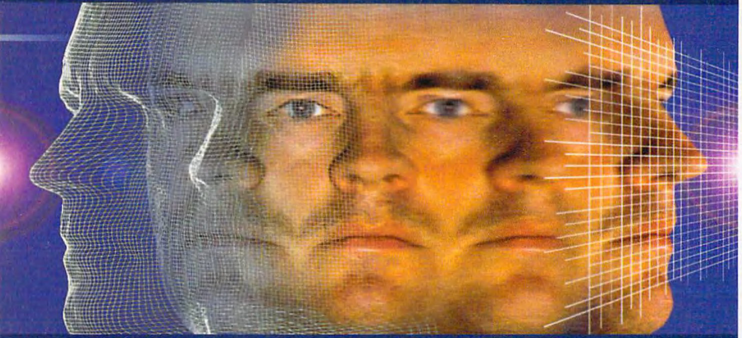

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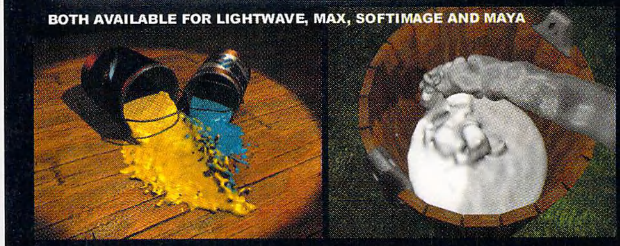

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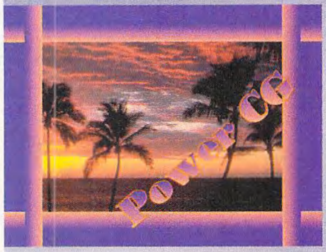

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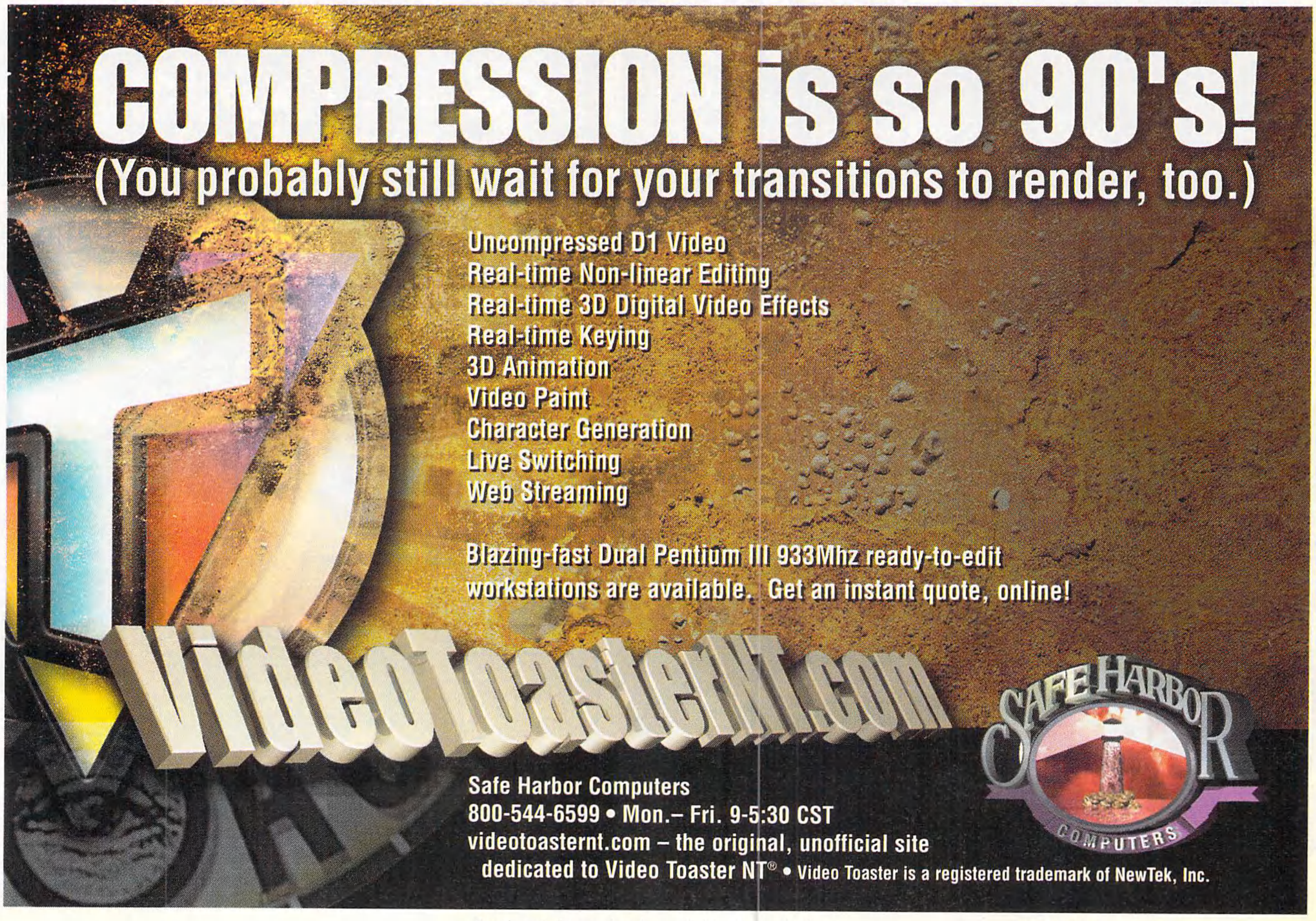
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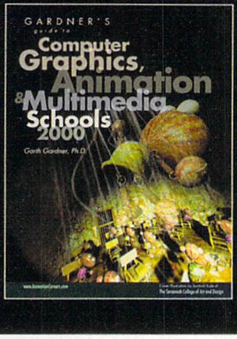

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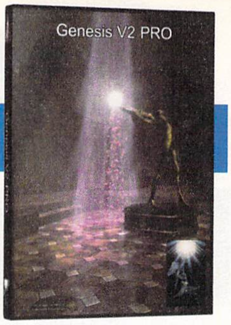

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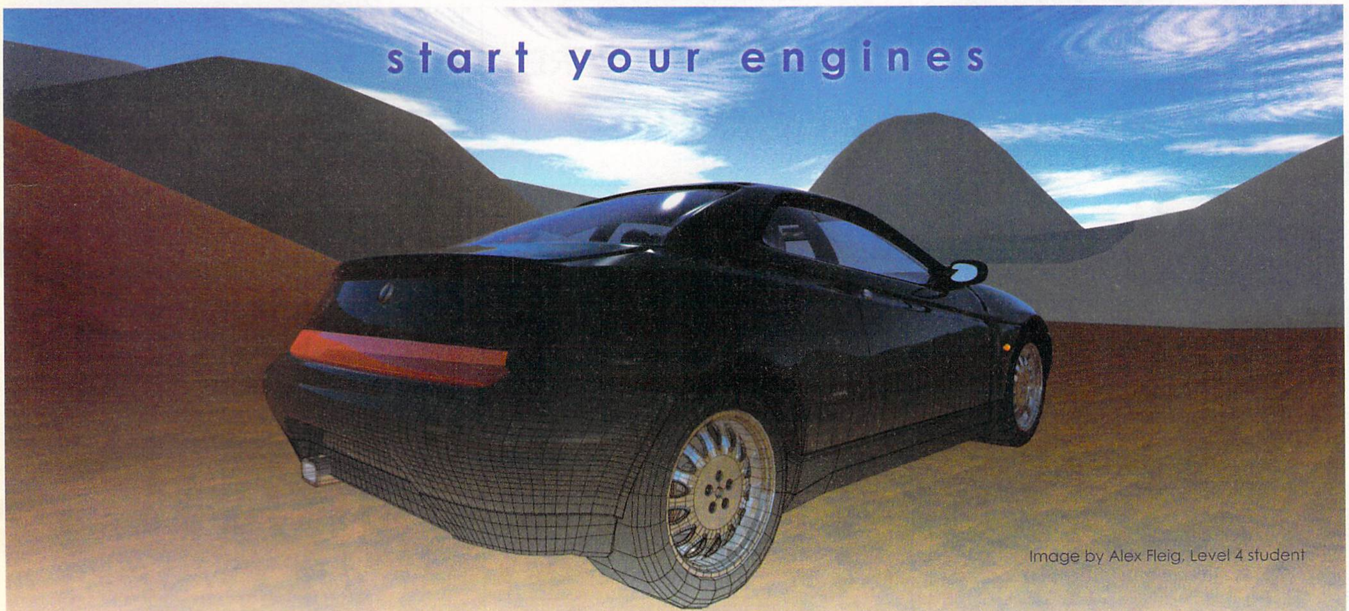

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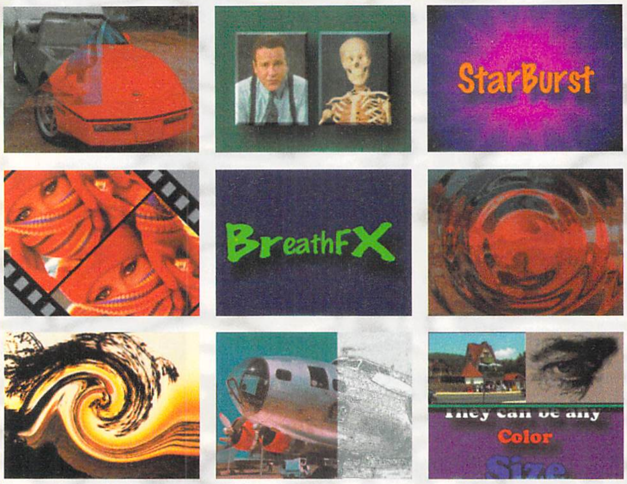

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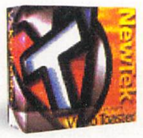

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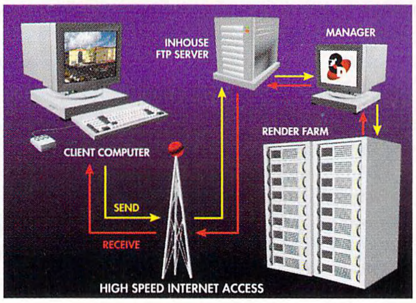

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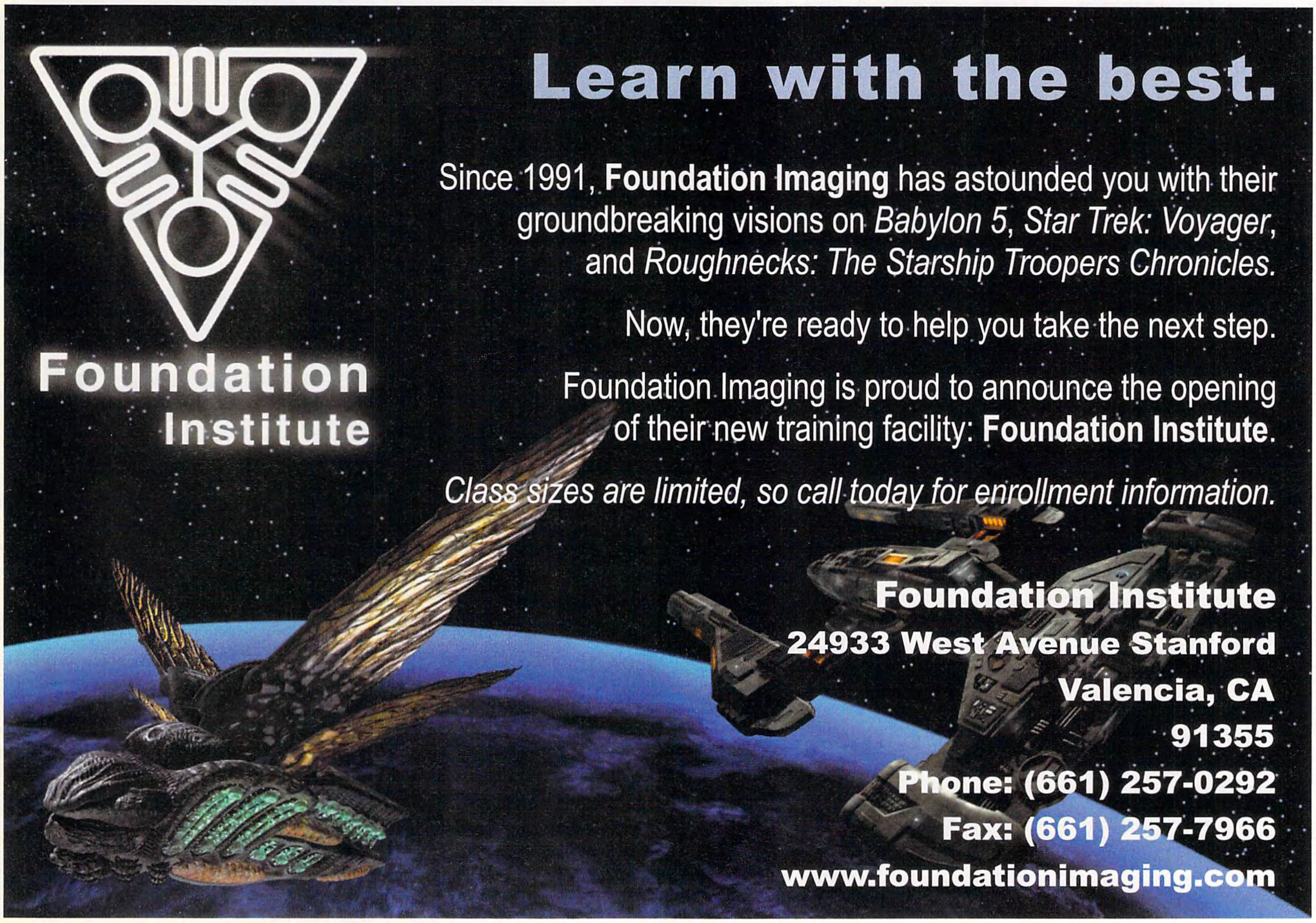

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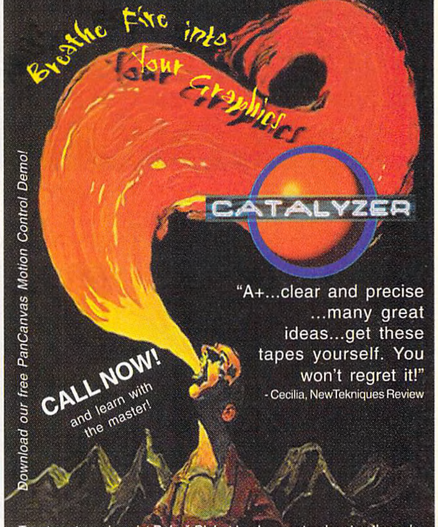

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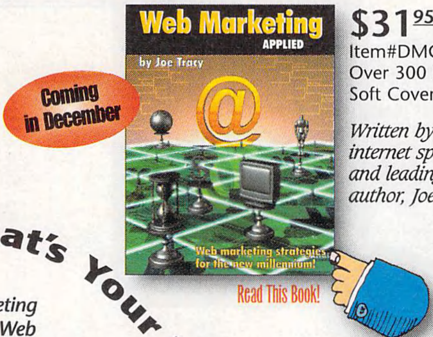

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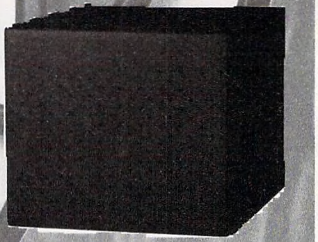

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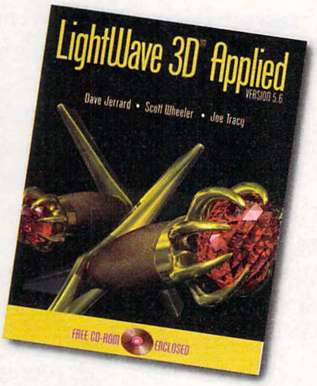

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Chapter 5: Tutorial: The Fountain in the Courtyard
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Eyetronics	49	109
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Legacy Maker Inc.	54	126
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r3d	53	123
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Swales Aerospace	52	121
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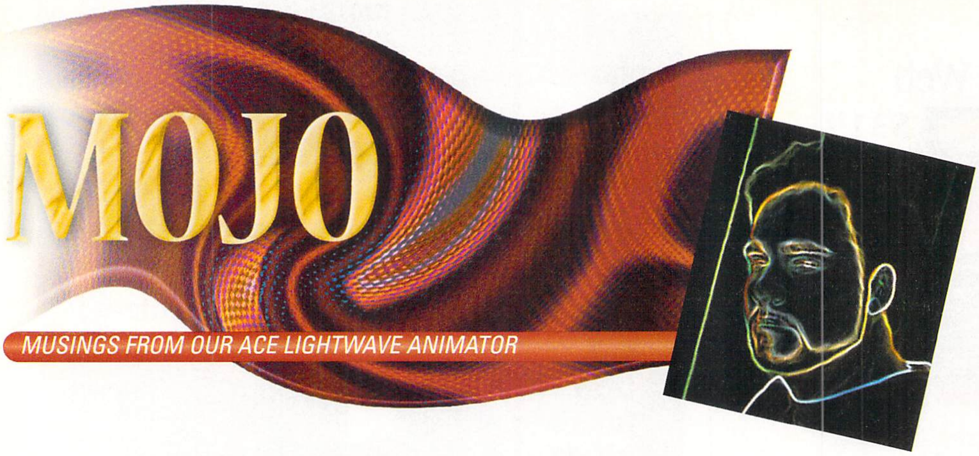
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Rueben Flagg, our ex-actor-turned-cop hero, repeatedly explained to people how he could still be the star of a show on Mars and patrolling the USA at the same time. "I got cancelled but the show didn't," he'd say. Through a process known as Trompolography™, the producers used computers to keep him in the show after they had fired him.

I was surprised because, as opposed to many of Chaykin's other reasonably extrapolated concepts, this idea was clearly impossible! Back then, I hadn't the foggiest notion of how it could be done, (after all, the prerequisite tools were still a long way off).

Clearly, either Mr. Chaykin knew a heck of a lot about computer theory or he had a crystal ball that could see about twenty years into the future.

* * *

We are at the dawn of the third and perhaps most significant milestone in computer animation. (I would submit *The Last Starfighter* and *Jurassic Park* as the first two.) Completely convincing human character animation seems to be the Holy Grail everyone is chasing. We've all seen stills of CG people that fooled us; but a full screen, tour-de-force performance has not (to my knowledge) claimed any bet-you-didn't-know-that-was-CG trophies yet.

You can be certain, somewhere, someone is slaving over a hot motion capture stage, fighting with pesky facial capture software or entering their fiftieth hour inside Photoshop trying to make a CG person look real. Sooner or later, one of them will succeed.

And sirens will sound, producers will howl and cash registers will ring - all celebrating a CG person who looks as good as an actor. But after all the weeks spent modeling the character, doing motion capture, lip sync, lighting and all the other usual LightWave components, wouldn't it always be easier just to stick some schlub in front of a camera and have him read lines?

To make even a single shot of a realistic CG person always will require hard work, which means time and time means money. So I doubt any studio will shell out the cash for an elite team to spend eight years making a movie with perfectly rendered actors (especially when it could have been filmed with flesh and blood performers in two). For the same reasons, few cel animated films have ever tried to portray realistic looking humans and I think the same trend will carry over to computer animation.

Still, the ability to create actors digitally will play an important role in Hollywood. Stylized caricatures will help create a new genre of super-realistic animated film. (Audiences don't need perfectly rendered characters to enjoy a movie - perfectly *written* ones are much more important.) Also, dangerous stunts will be handled by an actor's digital equivalent, allowing the camera to move much closer to the action. Of course, a few actors will be brought back from the grave to thrill us with their performances one last time, yet I doubt this will amount to little more than a creepy fad.

It all comes down to need. Mile long spaceships and dinosaurs don't exist, and dogs and cats don't always follow instructions; so we need to generate them. But actors *do* exist, and most of the time they will do what you ask. Even if some inventive writers develop ideas that cannot be accomplished without the use of digital actors, the question will be, does every shot of every scene require them?

Of course, if I'm wrong, the Trompolographists™ will make a fortune.

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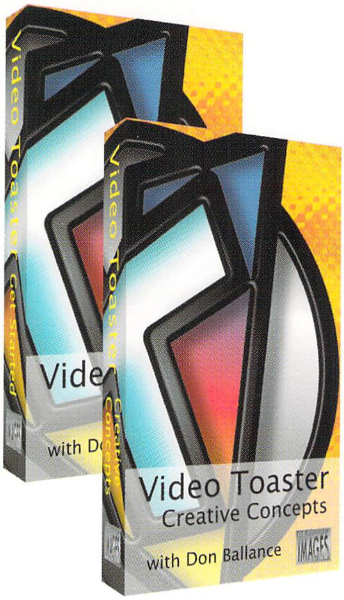
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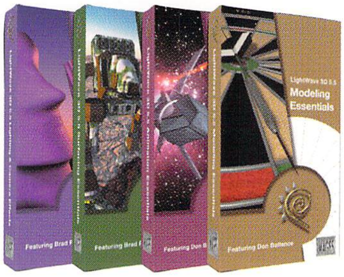
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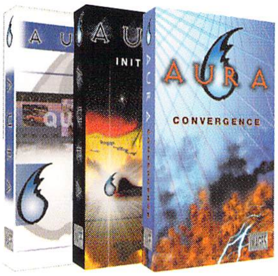
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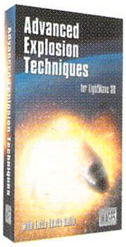
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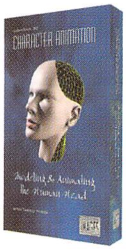
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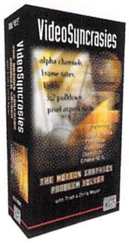
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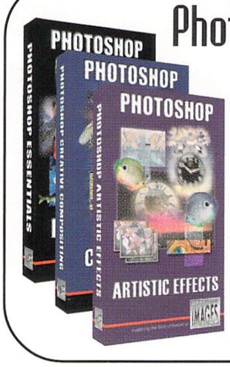
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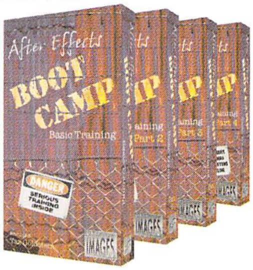
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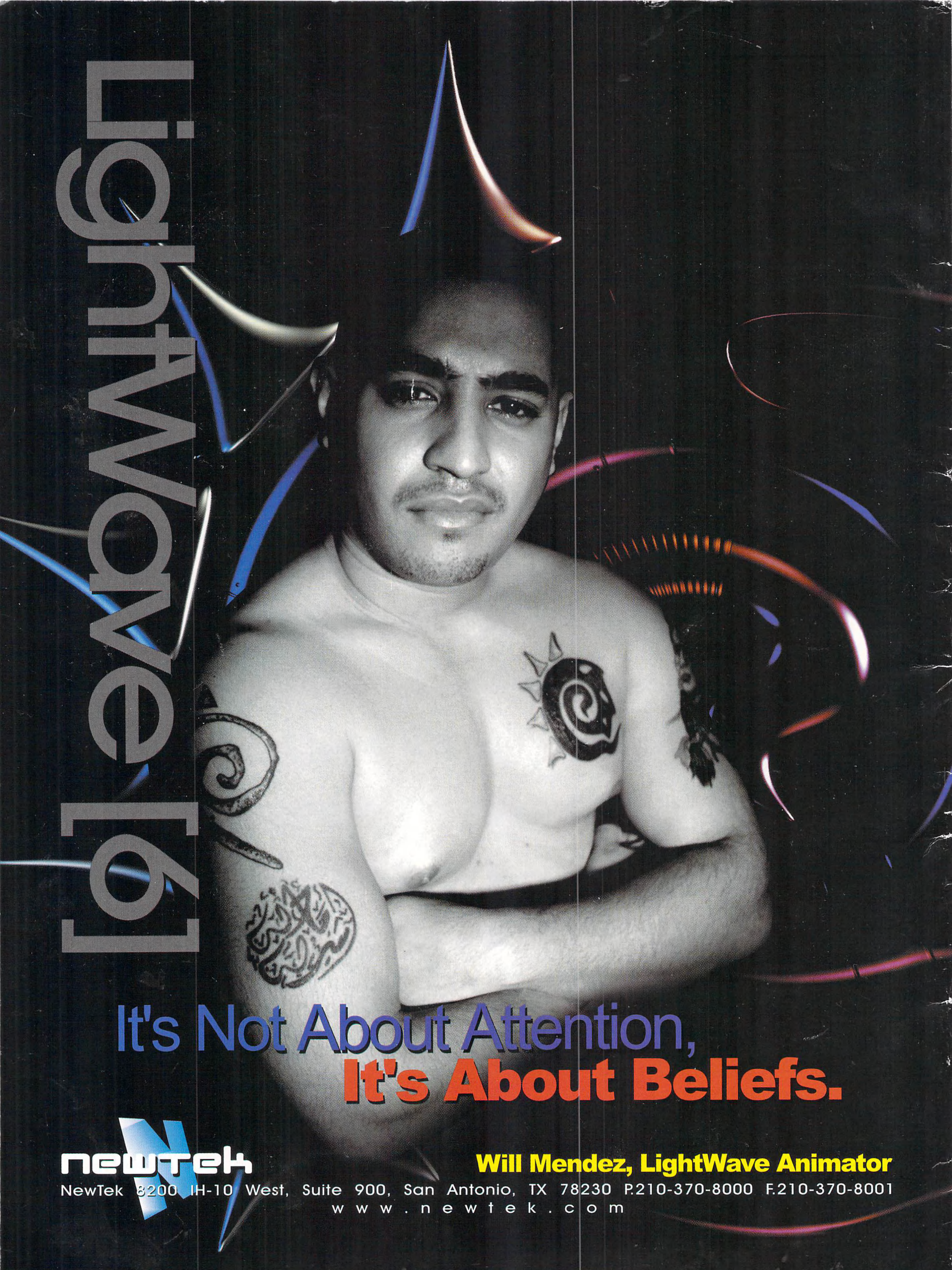
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